PROCESS IMPROVEMENT FOR EMERGENCY DEPARTMENT FAST TRACK

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Abstract

A modification within triage was created to assist with the differentiation of fast track and non-fast track patients in an urban, nontrauma center emergency department. The process improvement project intended to have fast track appropriate patients ready for provider evaluation in a decrease time frame. The triage modification reduced the number of questions asked to fast track patients to four. Overall, the goal was to demonstrate that earlier provider evaluation decreased total patient length of stay for fast track patients. However, the process improvement project was terminated early due to the outbreak of COVID-19 in the winter/early spring of 2020. There was minimal data collection specific to fast track, but overall departmental data suggests that when providers evaluate patients in a timely manner, the total patient length of stay time decreases.

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Chapter One: Overview of the Problem of Interest

The triage process is an initial decision point for all patients that enter an emergency department. The process of how a patient is routed through the emergency department (ED) from arrival to discharge, needs improvement to assist a growing population in a local area hospital. Prior to the initiation of the process improvement (PI) project undertaken, a fragmented triage process created redundant questioning before provider evaluation. Some patients may have had to repeat information five times during the triage process. This PI project aimed to streamline patient triage, which allowed earlier patient-provider interaction. This streamlined clinical flow directly impacted measured time metrics for the department, arrival to provider time length, and reduced the overall patient length of stay. The decreased time spent in triage ideally will contribute to a reduction in overall departmental overcrowding, increased patient satisfaction, increased staff satisfaction, with the hope that these positive changes can return increased revenue.

Background Information

The Emergency Department has become a contact point for the general public into the healthcare system. The task of differentiating patients that need immediate attention and those that have less urgent medical needs is critical for patient flow in an ED (McCaughey, 2015). The differentiation of the patients is the triage process. The Emergency Severity Index (ESI) is a one to five based algorithm that accounts for expected resources that will be used during the patient encounter. The scale is rated so that a level one patient needs immediate life-saving interventions, and the level five patient is considered nonurgent and will take no identified resources based on the ESI algorithm (Gilboy, Tanabe, Travers, & Rosenau, 2012). The less urgent conditions, levels four and five, are categorized as fast track (FT) patients.

Less urgent patients should require fewer resources and be able to have an accelerated throughput compared to the patient that enters with a more emergent need; therefore, FT areas have gained popularity (Hwang, Lipman, & Kane, 2015). Reimbursement from third-party insurance relates to patient satisfaction. Having an efficient system where patients are identified, treated quickly and appropriately, then discharged promptly will decrease poor patient satisfaction scores and increase funding for continued facility viability (Gardner, Friedman, Carlson, Bradham, & Barrett, 2017).

Overcrowding in the ED has become an everyday event. The overcrowding can contribute to poor patient satisfaction, delayed patient evaluation which can lead to increased morbidity and mortality, a longer length of stays (LOS), and an increased number of patients leaving without being seen (LWBS) (Gardner, Friedman, Carlson, Bradham, & Barrett, 2017).

Triage is the starting point for medical contact with a patient in the ED. According to Zeis (2014), "triage activity supports ED throughput and efficiency." Making triage a seamless process where patients are separated into traditional and FT areas will improve patient experience, ideally resulting in expedited, efficient, cost-sensitive, time-sensitive, excellent quality care.

Significance of the Clinical Problem

The PI took place in an ED which transitioned from a free-standing clinic to an ED within a hospital. The facility was initially built to see 95 patients in a 24-hour period. It was constructed almost 15 years ago. Since that time, the population in the surrounding zip code has tripled from just over 11,000 to more than 33,000 people (WakeGOV, 2017). At the initiation of the PI, the facility treated about 120 patients daily, with the busiest days reaching close to 160 patients in 24 hours ([redacted], 2019). The ED has added providers and utilized areas that were

not part of the original ED design as clinical evaluation areas. There was the introduction of a nurse first (NF) position that functions as a pivot point for a brief initial assessment and assignment of ESI level without vital signs. However, the process for FT and main department patient populations have not changed. The triage process before the PI was very fragmented; it included multiple stopping points and a variety of pathways to progress from department arrival to the provider. (See Appendix A).

The flow currently is arrival to department and register at the front desk, move around the corner to the NF area where initial assessment and triage occur. The patients then enter a hallway where vital signs and predetermined standing orders are completed. The patient will then return to the main lobby waiting area until there is an available examination area available.

The arrival and triage process before project initiation are detailed as follows. 1)Upon arrival, initial patient demographics were entered into the electronic medical record system Epic® by the registration staff. This step printed chart stickers, a patient armband, and an encounter number. The armband was then placed onto the patient by the registration staff. The stickers were placed on the top level of a two-level paper bin next to the registration desk. 2a) If overtly in distress and room is available, the NF will take the patient immediately back to an examination room and complete the triage process in that room. While this happens, there is no direct way to contact the triage nurse, potentially leading to a backup of initial patient evaluations. 2b) If the patient is stable, the NF completes their aspect of the triage process, the patient turns 180 degrees to walk down a hallway. 3) The patient waits to have vital signs and potentially an electrocardiogram (EKG) completed by a nurse aid. One significant problem is that there is no direct way for the NF to contact the CNA to advise them of the need for an EKG if that presents during the NF assessment. All chest pain and respiratory distress patients are

called by registration upon arrival to CNA for an EKG. These patients generally bypass the NF position and are triaged by the triage nurse. 4) The patient then returns to the hallway or waiting room to await the initiation of appropriate standing orders entered by NF. 5) If standing orders need to be completed, the patient is called to a different triage room where appropriate orders are completed. The patient once again will return to the main waiting room area to be called to an examination room. Once specimens are obtained, the triage nurse must then leave the triage area to enter the main department where they can use the pneumatic tube system to send specimens to the laboratory. This process has the nurse going through a badge access door. After confirmation of pneumatic tube delivery, the nurse can then return to the triage booth to assist the next patient. 6)The patient is called back and escorted to a room by a staff member. 7) The patient is now waiting to see a provider.

There are three badge access doors in between the main lobby and FT examination area. The area that is used is more than 30 yards away from the main waiting room. Before PI initiation, the ED was only allowed to use four of the seven rooms from two p.m. until five p.m. Access to all seven rooms is guaranteed after five p.m. since space was shared with preadmission testing, nutrition, and outpatient lab. As the PI project began, the FT area was granted to the ED full time without the need for shared department space. This change also allowed the time of the FT area opening to change based only on the needs of the department during any specific day.

Question Guiding Inquiry

The PI project being proposed is to create and define a protocol that will streamline the process for fast track patients from initial triage to initial provider contact. There is limited evidence that identifies what information is needed to complete the triage process from a national standard, only from an organizational level. The provider, nurse, CNA, and patient will not have

multiple stops in the process of arrival to discharge. The basis for the new process will be that once the patient is determined to meet FT eligibility, the triage process will end. The patient will be escorted to an area designated for FT patients to await provider evaluation. The patient will then be able to explain the situation to both the nurse and provider at the same time. Orders will be carried out with increased efficiency, and discharges will occur more quickly. The hospital and surrounding areas are growing; a change is essential to maintain excellent patient care and align with the mission, vision, and values of the organization.

Population.

The ED where this intervention took place, had 43,277 patient encounters in the fiscal year 2018 ([redacted], 2019). Of that population, fast track appropriate patients were ESI level 4– 14 272, and ESI 5 were 858. These patients accounted for 35% of the total patient volume for the year. The volume that was experienced last year should increase with continued growth in the area of a rate of 40 people per day (WakeGOV, 2017). Improved triage for the FT population is essential for the growth of the community.

The average length of stay (LOS) for a FT patient in this department was over three hours ([redacted], 2019). National average goals have the LOS for FT patients under 90 minutes. An approved certificate of need for hospital ED expansion from 19 to 32 beds to accommodate the increase in patient population serviced by the facility was granted. Having an efficient plan, routine patient flow, and standardized work process that an architect can design a room structure around will only assist in increased patient progression and throughput. Increasing the capacity of the department will increase the number of patients that can be evaluated at any given time, leading to a decrease in overall LOS

Intervention. The intervention examined in the proposed project will be to streamline the triage process for FT appropriate patients. The standardized intervention will be that once NF has identified a FT patient, the patient will then move into an area where the provider and nurse can work as a team to complete triage, obtain vital signs, order diagnostics, complete orders, perform interventions, and discharge the patient without the multiple returns to waiting rooms and staff process interruptions. A fast track interprofessional team will be established that is identified as the provider, nurse, and patient care technician. These patients will be separated from the general ED population, rotating in and out of two private rooms where patient care will occur.

Comparison. The comparison evaluated was patient times before, during, and post-intervention. The time intervals that will be compared are arrival to triage, arrival to provider, provider to discharge, and the total length of stay for this PI project. This process will be iterative. The intended time frame for the project will be 60 days, completing a PDSA evaluation every two weeks as needed. The PDSA will allow for real-time iterative modification of the process. The project included requested staff feedback. There is a small group of nurses, less than 12, that primarily work in the triage and NF areas; the feedback came from this group. Feedback of improvements and suggestions about modifications to the new process will be considered and used in the evaluation of the implemented process. Then a new iteration of the process will occur. PDSA allows for growth and progression within the PI project.

Outcome(s). Initial evaluation criteria were related to time, specifically, to determine if a decrease in patient waiting time occurred. Several increments of time will be assessed: arrival to triage, triage to provider, arrival to provider, the total LOS are the increments that will be

measured in this project to determine if the new process elicited change for each of the specified time frames.

Summary

The delivery of healthcare in America is changing. In the ED, the process for categorizing patients into urgent and nonurgent categories had aided the throughput of patients and department efficiency. The current process at a local emergency room requires improvement for continued excellent, high-quality patient care for the nonurgent patient. The proposed process improvement created a new patient flow for the nonurgent patient cases called fast track. This new process will allow straightforward presentations of patient complaints to reach the provider more quickly, which, in turn, will enable the patient to have a shorter LOS. The new process will have the patient encounter a provider at an earlier stage of their hospital visit, initiating a decrease in overall LOS. Decreased LOS should have a ripple effect on patient satisfaction scores correlating to increased revenue for the department.

Chapter Two: Review of the Literature

Increased visits to emergency departments (ED) continue to rise. The ED was initially looked at as the last resort or a place that people did not use for basic healthcare needs. That mindset has changed. It has become an entry point into the healthcare system. An ED has the capability of treating a variety of patients with a wide range of needs. The ED to become a place where people now seek care, emergent, or not.

Literature Appraisal Methodology

Sampling strategies. Multiple key words ideas were included in the search for a project topic. Initially, search terms included emergency department (ED), fast track (FT), patient throughput, and efficiency. This criterion was expanded to include fast track assessment, fast track charting, patient flow, crowding, triage, length of stay, and quick look. The databases that were searched included CINHAL, Medline, and PubMed. A cursory search of the Agency for Healthcare Research and Quality (AHRQ) was also explored without finding any relevant articles on the topic of increased efficiency for fast track triage in an Emergency Department. However, relevant information regarding national and state statistics for ED visits, admissions, categories of diagnosis, and demographics for the patients was obtained from the AHRQ information.

A total of more than 10,000 articles met initial search criteria. The evaluation began with the title and abstract. Severe restriction of the articles started to eliminate any that referred to physical space alteration, the introduction of new technology such as computerized provider order entry, adding of additional staff members, or elimination of the patient registration members of the care team. After these articles were eliminated, forty-two articles were kept for

more detailed review and exploration. Twenty articles were included in the use of this PI project.

Evaluation criteria. No article evaluated was able to establish level one criteria, evidence of a double-blind study, single control mechanism, or random control trial study event. This eliminates any level I to level III criteria based on the Melnyk scale. Very few of the articles had a cohort study example, the few that did use a sample group for a similar day of volume and staffing compared to the intervention time. The setting of the ED does not allow for a control test. Significant and constant changes occur routinely in the ED. Trauma can occur at any time, and staff must be prepared to respond. The influx of patients into an ED also variable; the volume of patients that arrive during any given hour and the severity of illness of each patient. From one perspective, everything about and ED is random, so the argument for randomized control can be made except for the notion that there must be a control to compare finding from the random sample, which is not possible giving the setting of the ED.

The next best level of evidence is from well-designed cohort studies. Cohort studies are the most probable and functional evaluation technique in an ED setting. Several articles were from this level of evidence. Each day and each hour can bring unexpected circumstances to the department. However, there are some similarities to patient presentations. Patients will get lacerations that need stitches, abdominal pain that has a standard workup, sore throats that need to be cultured, or kids with ear infections that need an evaluation. Common illness presentations allow for some normalcy in an environment of chaos. These are examples of the cohorts evaluated in the literature review. The specific cohort evaluation for the conditions of this paper involved the patient population of fast track.

Much of the collected evidence referring to specific interventions associated with a FT population include opinions, the lowest level of evidence, and the least quantitative. Patient satisfaction scores influence how we, as healthcare professionals, interact with our patients. Score evaluations determine a link with longer wait times and lower patient satisfaction scores. The interventions explored in the research were developed around how to decrease the total length of stay times in the ED for fast track patients (Hwang, Lipman, & Kane, 2015).

Articles were eliminated due to the inability to find an English translation of the research, if the focus was on electronic documentation, if the intervention was the use of a scribe, an increase in substantial numbers of staff, or structural redesign of the departmental layout. The levels of criteria used to evaluate research are not applied to the articles that are included in this literature review. The one study that was an umbrella review admits that the supporting evidence for patient flow interventions is weak (de Freitas, Goodacre, O'Hara, Thokala, and Hariharan, 2018). This situation uncovers a lack of evidence in the literature since most articles address the idea of patient flow as a way to combat overcrowding, long patient length of stay times, and ways to address ED satisfaction (Hitchcock, 2012; Fitzgerald, Pelletier, and Rezneck, 2017; Zeis, 2014).

Literature Review Findings

Separation of patient populations. This process improvement (PI) project modified the current throughput process for the fast track patient population at a non-trauma center ED. The patient population that benefited from this intervention are those classified as fast track (FT). The patients can also be referred to as treat and street or treat and release (Gardner, Friedman, Carlson, Bradham, & Barrett, 2018). These patients are classified with an Emergency Severity Index (ESI) of four or five. These lower acuity patients require fewer resources to perform all

appropriate care needs. The Emergency Severity Index is the standardized triage algorithm supported by the Agency for Healthcare Research and Quality (ESI triage research team, 2016). The algorithm allows for systematic division of patients on a one to five scale; with one being an immediate need for life-saving intervention and five being no need for immediate intervention with the use of no resources to perform complete patient care. The FT area included the patients who are determined to conform to level four and five criteria. No solidified uniform definition of fast track is available for comparison within the current body of research. The lack of a standardized definition regarding FT can account for the variety of metrics that are evident in the research. Some article involves patients that are on a fast track to admission, not a fast track unit for treatment and discharge.

Fast track patients are those uncomplicated straight forward patients that are going to be treated and discharged with a minimal number of resources used during their hospital stay. Another framework for this patient population is the patients that do not require a bed or stretcher to be evaluated; they are vertical evaluation patients (Dover, 2012; Fellows, 2015; Khalifa and Zabani, 2016). The FT patient does not require cardiac monitoring during their stay, present with urgent care or primary care level complaints, or those injuries that cannot be treated with typical over the counter products are the patients associated with this PI project.

Findings in the literature reveal similar styles of interventions. The most common is the addition of the FT unit, or the expansion of the unit in peak need hours to allow for decompression and diversion of nonurgent patients to another area of care (Gardner, Friedman, Carlson, Bradham, & Barrett, 2018; Khalifa & Zabani, 2016; Zeis, 2014). A bottleneck effect occurs once all beds in the department are full. When this happens, care for all patients slows, the most critical or most seriously injured are assigned the next available stretcher. As a result,

the FT patients are potentially waiting for hours before being evaluated by a provider. All patients that arrive at the ED after the department reaches full bed capacity `go through the triage area. Separating patients in this area can improve the efficiency of care (Fellows, 2015; Hitchcock, 2012). Once separated, the FT patients are evaluated in a different area from the main department. More serious emergent patient cases do not delay FT patient care. Designating a FT area which provides patient separation can alleviate some of the congestion with the department as a whole (Fitzgerald, Pelletier, & Reznek, 2017). The division of patients can decrease the strain on the main department to see all the presenting patients. Another advantage of a FT patient is that they can be processed vertically. There is no need for a stretcher for evaluation of presenting complaint. Not having the patient lay in a stretcher or change into a hospital gown is a time saver.

Triage must be completed to determine if a patient is FT appropriate. This PI project modified the existing triage process to streamline triage for only the FT appropriate patient population. Decisions for streamlining included considering what information is necessary to make an accurate ESI level determination. Currently, there is no standard set of information relating to what should and should not be collected during triage. The information to make a triage decision for a patient who clearly has pink eye is vastly different from the patient information needed to decide for a patient that may have a small bowel obstruction or a visible long bone fracture. According to ESI, there are only four decision points to assign an acuity level. These four decision points do not directly involve; past medical history, current medications, allergies, use of alcohol, use of tobacco, use of illicit substances, gender, immunization status, tetanus within the last five years, advanced directives, cultural or spiritual considerations, potential exposure to tuberculosis, suicidal ideation, safe home environment, last

menstrual period, previous surgeries, or how best they learn. This list of the required information is currently asked during the triage process at this facility, which delays the triage process and does not help to identify FT patients.

Information gathering. Streamlining information gathering for the FT patient population will decrease the time that is spent in triage. No evidence implies or outright states that a full past medical history is beneficial when treating a patient with a simple arm laceration or other simple complaints. Beyond shorter triage times, with one article setting a goal of fewer than three minutes, followed by the patient moved to an area where a provider will be able to address their chief complaint (Huffman, 2019). In this example, having the patient arrive more quickly to the provider is the primary goal for optimal patient safety and improved patient care (Hitchcock, 2012).

A common complaint that patients express is the repeating of their stories. Patients are asked by multiple staff about the incident, events, or circumstances that presented them to the ED. A team approach to completed triage is a way of overcoming this aspect of perceived patient inconvenience (Celona et al., 2018). A provider will ask the previous triage questions specific to past medical history, medications, allergies, previous surgeries, immunizations, and last menstrual period. The nurse will be with the provider and be able to complete these areas in the electronic medical record. The nurse will also be able to obtain vital signs while the provider is evaluating the patient. Any additional information that is not addressed by the provider will be completed by the nurse and recorded.

The three most significant time delays in patient care are the initial assessment by the provider, the ordering of diagnostics-radiology and laboratory items (Gill et al., 2018). By streamlining the arrival to provider time, the lag time for providers to place orders for radiology

and lab will decrease, addressing all three barriers to delayed patient care. Thus, resulting in an overall decreased patient length of stay in the ED. One article looked at a physical map of the emergency department. After evaluation, it brought the FT area closer to the ambulatory care entrance since FT patients generally walk into the department. The physical closer proximity also decreased the length of stay times because patients did not have to be relocated to multiple areas for treatment. After triage, patients were directed to a specific area of the ED designated and designed to treat FT patients and where the team of employees were located. This approach is being evaluated for potential application but remains outside of the scope of the PI project.

Resource utilization. Addressing the times of radiology and laboratory turn around are outside of the scope of this project. We will assume that these departments will take the same amount of time to conclude a routine test regardless of the ED area from which the test was ordered. It is impossible to make an influenza test result in a shorter amount of time than the assay requires. The variable in the equation is how quickly can the test be ordered, collected, and delivered to the lab so that they can begin to process the swab and achieve the results. These same principles apply to all radiology studies as well.

Resource allocation is another critical driver of ED efficiency. Both personnel and supplies are resources utilized within the department. Having the ability to modify certain nursing positions to accommodate the flow of the ED will be an asset in addressing the overcrowding issues that have become the usual routine. National time standards for the door to provider time is 29 minutes, and arrival to discharge is 136 minutes (Celona et al., 2018). Currently, the ED where this PI project will occur has a door to doctor times of 44 minutes and arrival to discharge of 128 minutes ([redacted], 2019). Recent interventions have addressed the

departure process, which has become successful. This intervention will work to address the needs of the arrival to provider time.

Limitation of the Literature Review Process

Emergency departments are grouped based on patient volumes, according to the Centers for Medicaid and Medicare Services (CMS). CMS pulls information that looks only at times of patients rather than at the circumstances of the patients because those are more difficult to quantify. Additionally, value-based purchasing was a way for CMS to group particular diagnoses and treatments into specific categories. These categories limit the reimbursement for facilities that perform more extensive workups on patients. Reimbursement also takes into account that 30% of revenue is based on patient satisfaction. Satisfied patients are repeat customers, but unsatisfied customers could affect the potential patient population. The satisfaction numbers encourage change within facilities to improve scores, which in turn increases reimbursement. However, the CMS website is challenging to navigate, and extracting specific data becomes cumbersome and inefficient. The website does not evaluate the appropriateness of patient care, but rather, predetermined metrics related to patient perception and total times.

The literature reviewed does not identify the population density that the department serves or if it is a part of a more significant healthcare system. It is also of note that the design or redesign of the physical layout of an ED was mentioned in multiple articles. Still, the cost of these capital projects was never relayed. A dramatic redesign of the physical structure is outside the scope of this project. However, it is also of note that a redesign will be occurring at this facility. Still, a solidified throughput process has must be determined so that the design of the facility will enhance the patient flow.

Discussion

Conclusion of finding. The project will address the disparity of door to provider times in an urban non-trauma center ED. Incorporated will be aspects of the research, and utilizing the information gathered, a new triage process will be constructed for FT patients. The project will include the alteration of the questions asked during the triage process. Elimination of the redundancy presented to patients while they move through the department areas of registration, the nurse first, vital signs, and triage standing orders, finally to arrive in front of a provider. During the transition between each of these stages, a potential wait occurs, further delaying readiness for provider evaluation. When considering all the potential delays, it is not hard to determine why there is a 44-minute lag from arrival time to the time a patient sees a provider. It must also be considered that this number is from data in May 2019, which is not during the busiest season of ED visits. Arrival to provider times during the busiest days can reach more than two hours for FT patients ([redacted], 2020).

Establishing a team approach to the FT patients will increase the efficiency of care they receive. A closer working relationship between the provider and the nurse will assist the patient by decreasing the number of times they will have to explain their reason for their visit to the ED. The provider will pick up the information collection component of triage since that is part of the standard interview with a patient. The nurse will collect vital signs while the patient is being interviewed by the provider and be able to enter information into the electronic medical record. Having this initial separation of patients will allow the triage nurse and triage tech more valuable time to address concerns of patients with more acute and urgent issues.

A benefit to the timing of this project is that it was being implemented during the most high-volume time of the year, the height of winter cold and flu season. There have been total

length of stay times for FT patients that have exceeded 240 minutes. There is a direct connection with increased length of stay times and decreased patient satisfaction. The new triage for FT patients will help to counteract this high-volume time of the year and make the entire department operate with increased efficiency.

Advantages and disadvantages. One clear advantage will be increased patient throughput. The articles reviewed regarding triage and FT identified that a significant area for improvement resides in advancing the patient to the provider in a decreased time frame. Approaching healthcare as a unified team, which is inclusive of the different disciplines work in complement for the care of each patient. It is reasonable to assume if overall LOS is decreased, then satisfaction scores will increase, which will increase reimbursement for the department.

Another advantage is the increased utilization of resources — both personnel and supplies but also physical space and time. Patients do not want to feel as if they are being treated in a hurried manner or providers in underutilized capacity. This intervention addressed this issue by continuing to have patients enter the FT area.

The final advantage that will be discussed is the most important. The patient will need to be the center of healthcare decisions. All the improvements will need to be in the best interest of the patient in mind. A restructuring of the current process will help the ED provide more efficient patient care.

A disadvantage is that this intervention will be occurring during one of the busiest times of the year, and the potential for disruption in triage could cause a more significant impact on more patients than if implemented in a slow time. The intervention proposed occurred in a short period; it went into effect in the middle of the busiest month experienced in the department. Modifications were applied to the revised triage after the collected data. They were allowing

minor adjustments to be made then the second timeframe of one month will occur to have numbers and metrics to compare. The second month of data collection did not occur due to the COVID pandemic. The project was converted to change management to adapt to changing hospital policy and the elimination of clinical site placement.

Another disadvantage is that many of the articles called for the addition of staff. The scope of this project will not be able to add staffing to the daily schedule since the provider group is a contract organization and not employed by the ED parent company. Currently, there is cooperation with the contract provider, but they can withdraw support at any time during the intervention.

Utilization of findings in practice change. Incorporating interventions from other projects and making site-specific modifications will create a circumstance for the improved door to provider times in this facility. The specific changes will decrease the length of time it takes for patients to progress from arrival to provider evaluation. Creating FT separation from the main ED population will allow for increased throughput of the less acute patients. The patients in the FT area will experience a triage and assessment that combines the provider and nursing staff. These patients will no longer need to be on a stretcher for evaluation and will not need to change into a hospital gown for evaluation. Minor changes were expected to make significant decreases in patient length of stay changes. It is exciting to be at the forefront of the intervention that will improve patient experiences and patient care.

Summary

The research presents many styles of intervention and at a variety of costs. Implementations of whole computerized charting systems or physical design modifications are outside of the possibilities for this project. Instead, it will focus on process improvement

centered around triage for the nonurgent patients classified as ESI level four and five in a local non-trauma center ED. National Triple Aim is a three goals model combining the purpose of improving population health, improving the individual patient experience, and reducing the cost for the population. This project addresses each of these aspirations. The ED serves the people of the area or the local population while the company strives to improve care on a statewide level. Keeping the focus on the patient is the essential reason for the care experienced to be improved. Since the goal of the intervention is to make care more efficient, that has a direct implication of cost-efficiency.

Chapter Three: Theory and Concept Model for Evidence-based Practice

Advances in nursing and medicine have come to be based on research versus experience or expert opinion. The Evidence-Based Practice models include various approaches, and the Iowa model has been selected to help implement and disseminate the information compiled for this project. Newman's System Theory approach to care will allow for the remaining context of practice application into the existing system of the emergency department since this theory contains a component of flexibility vital to an emergency department (ED).

Concept Analysis

This quality improvement project has three major concepts: triage, fast track (FT), and fast track team. Triage is defined as the brief information collection period by a nurse about a patient that takes into account their chief complaint and presenting symptoms. The Nurse First (NF) area is where the initial contact between the patient and the healthcare team occurs. In this department, the Emergency Severity Index (ESI) scale is used. ESI is the approved triage scale by the Department of Health and Human Services (ESI triage research team, 2016). It is at this point; the NF will choose if the patient is FT appropriate. If the patient is determined to meet FT criteria based on the ESI scale, the triage process will end for the patient, and they will be directed to a different waiting area than patients who are not FT appropriate.

The next concept defined is fast track. Fast track is a separate area of the emergency department that can address nonurgent patient complaints. These are the patients that have a chief complaint of minor ailments or injuries. There is no standard accepted definition of fast track. For this project, FT patients will be defined as patients who conform to the following criteria. The patient will have an ESI level of four or five that was determined during triage. The patients in the FT area will be able to be treated without the utilization of a cardiac monitor.

They will not require a stretcher for evaluation. Finally, they will have the ability to wait for results in a nonprivate area since there was no need to change into a hospital gown for evaluation. All evaluations and examinations will take place in a private room.

The last concept will be the creation of an interprofessional team. The team included a provider, nurse, and nurse aid, if possible, that were assigned to FT. The staff members change daily based on the staffing needs of the department. These members will work as an organized unit (Celona et al., 2018). The provider will conduct the indicated assessment while the RN is in the room. Both staff members will chart on the patient during the interview. As the provider asks the patient questions about their history, current medication, allergies, and other items, the nurse will be able to chart that information in the electronic medical record. The nurse will obtain vital signs during the interview, allowing some time for the provider to enter orders into the chart.

The underlying purpose and intention for this process improvement (PI) project are to improve the quality of care and decrease the length of stay, increasing patient satisfaction. The ED can become overcrowded quickly; at this location, there are daily patient wait times of more than 60 minutes to have an initial provider assessment ([redacted], 2019). The triple aim reinforces that a patient center approach is preferable. Keeping an awareness of the patient experience, decreased cost, and overall population health aligns with the guiding mission of the organization where the process improvement project will occur. General population health is peripheral to the scope of this process improvement project, but care for the specific population of FT appropriate patients will be the focus.

Project Outcomes

Lean and Six Sigma are business concepts that have a focus on decreased waste. They are currently being applied in hospital systems to reduce waste just as they were to the manufacturing systems for which they were initially designed. The waste can come in any form, repeated tasks, location of supply storage, duplicate information collection, the physical location, or inconvenience. The Lean process assisted in the initial identification of long patient stay times. During this project, an attempt to eliminate inconsistency and waste during the arrival to the provider portion of FT patients. The new streamlined initial triage evaluation, combined with the completion of the remaining triage questions at a combined provider/nurse encounter, will decrease arrival to provider times and overall length of stay times. These are two of the data collection points that will be evaluated during the project. A secondary objective will be to increase patient satisfaction. Patient satisfaction will not be directly measured by this project but by the facilities, patient satisfaction surveyors. The surveyors collect data every month and provide reports every quarter. Staff feedback will also be collected during the project. The staff feedback will be evaluated and incorporated as appropriate.

Theoretical Framework

Naming the theory. The scope of the PI project occurs within the existing system of a local ED. There is a current FT area, and this project will modify the entry point for patients deemed appropriate. Newman's systems theory approach to care is in a holistic manner, which is paramount to patient-centered care (Petiprin, 2016). The project allows for the flexibility of the system in which the care is provided. This model views the patient as the primary entity. The patient will have developed particular responses to stimuli in the environment that are within a healthy range for that individual. When an event occurs that stretches the standard coping

mechanisms, or the usual responses do not realign, the balance is the time when the patients arrive at the facility. It then becomes a rebalancing act of how to return the patient to a previous state of health or balance. While allowing for the system, the ED, to absorb new influx and flow with multiple patient arrivals, the event that caused a balance shift for the patient may occur in a brief period, such as with a laceration or over a few days as with an upper respiratory infection. There were no specific theories named in the research collected for this project that addressed which theoretical model was utilized. However, many of the articles evaluated referred to the area of fast track as a part of the system that made the whole system work with increased efficiency and timeliness, which is why Systems Theory has the best fit.

Application to practice change. The application of Newman's model to an emergency environment is simple in its approach. The model allows for constant change while reinforcing the importance of the patient at the center. The environment of change is a moving target in the ED. However, an area that is dedicated to exclusively treating patients that have fast turnaround times allows for some consistency with the movement of patients. Systems' Theory has an emphasis on interdependent relationships, patient with the hospital, patient with the nurse, the nurse with the hospital. This can be extended to incorporate all existing relationships within the ED, from the patients, staff, providers, and the multiple treatment areas within the department. Patients enter the department with different levels of severity and all hours of the day, and in multiple numbers. The hourly patient census starts to increase significantly, about 10:00 a.m., trending down about 11:00 p.m. ([redacted], 2019).

The nurse and the treatment team will use the System Theory approach, including the six stages, which coincide with the stages of nursing care: assessment, evaluation, diagnosis, planning, implementation, and evaluation. Patients enter each of these stages during ED

experience; however, for FT patients, some of the steps are not separated and happen in more rapid succession than in other areas of the department. Keeping in mind that evaluating streptococcal pharyngitis should not take as long as treating a patient for abdominal pain.

Practice Change Model

Naming the change model. The Iowa model is an evidence-based practice change model that has either a problem-focused or knowledge-focused trigger that is an impact for change (Dontje, 2007). There is then a four-phase process of change. The initial phase involves the identification of the problem itself and to determine if the problem is significant enough to be a priority for the organization. Once a determination is completed indicating a need for change to occur, the second stage in the model can begin. This second stage is to evaluate the existing literature. This review and critique will determine if enough evidence exists to make a change in practice. The next stage is to take the literature synthesis and identify the research evidence that supports the change. Lastly, it is the stage for implementation of the practice change. Additionally, this final stage will include monitoring the outcomes of the change.

The Nurse Practitioner can be the catalyst for change in the organization. There needs to be a level of commitment by the organization to change. Evaluation of a need for change should be on a systems level and include a multidisciplinary approach. Since the patient will interact with more than one section of the healthcare institution, having an investment from multiple aspects of clinical care areas is ideal. Idea sharing can be critical when quality improvement initiatives are implemented. The commitment to change and support from management is vital to effect lasting change in an organization.

Application to practice change. This quality improvement project follows the stages of the Iowa model perfectly. Initially, there was a clinical problem identified. The length of stay

for patients in the fast track area was close to four hours. There was an issue of patients leaving without being seen or even evaluated by a provider. Information gathering about where in the arrival process the most significant modifiable opportunities exist to decrease the overall length of stay was addressed. This project was designed to address that problem. A literature review was conducted. Various interventions were identified; three synergistic interventions were selected to be instituted at the facility. None of the chosen interventions will include the incorporation of additional staffing resources or additional technology resources. The scope of the intervention is to improve the triage process that currently exists. The selected process adaptations include modification of the current triage process, earlier access to the provider, and combined information collection gathering. There is support for these interventions within the literature. The literature indicates that earlier access to providers will decrease overall visit times. The initial intervention to decrease overall patient LOS is to modify the triage process resulting in earlier direct contact with a provider.

A common complaint in the emergency department is the retelling of the patient's chief complaint to multiple staff members as they progress from NF to obtaining vitals, and then to triage where standing orders are executed, along with and broken flow within the department at each of these steps. This barrier will be addressed by having the bulk of information collected during triage collected during the provider evaluation and interview of the chief complaint. Prompt order entry will decrease the wait times for radiology. A team approach will allow the nurse or technician to draw blood or collect specimens from patients almost as soon as it is ordered. These interventions result in earlier laboratory and radiology diagnostic results. In turn, this will allow for a more rapid diagnosis based on the presented results. Good examples of

this intervention are rapid strep test results, flu swab results, pregnancy test, urinalysis results, and extremity X-rays to assess for retained foreign bodies or fractures.

Research has demonstrated that shorter wait times lead to increased patient satisfaction. The goal of this project is to decrease the arrival to provider wait times of patients who area fast track appropriate. The intent is to achieve wait times consistent with or less than the national average. The final stage of the Iowa model includes time for evaluation of the intervention. Reports are generated on various time scales for the department and can evaluate various data points. For this project, data will be examined on a daily, weekly, and monthly interval to identify trends in the effectiveness of the interventions. The shorter weekly time interval will be used during the beginning of the project to address any specific issues and the monthly time interval will serve as a better barometer factor for determining a trend in decreased overall length of stay and decreased times from arrival to provider since it will include a larger population to average.

Summary

Using the System Theory model as a framework for treating the patient allows for a holistic approach to patient care with the constraint that it must occur within a volatile environment of the emergency department. The Iowa Model is an application framework for evidence-based practice initiatives into the daily treatment of patients. These two ideas will work in concert together to advance patient care and quality improvement.

Chapter Four: Pre-implementation Plan

This chapter contains the pre-implementation plan for this process improvement project. The project will focus on improving the overall patient length of stay for the fast track area by decreasing the time it takes each appropriate patient to progress from arrival at the registration desk, through triage, to an initial assessment by a provider. This decreased time to provider should decrease the overall length of stay for patients that are appropriate for the fast track area. Data points regarding the time intervals of patient arrival to triage, arrival to provider, and overall patient length of stay will be collected. This information will be extracted from the hospital's electronic medical records system and provided to the DNP student project leader as an Excel spreadsheet. Once collected, the data will be analyzed using run charts. The run charts will assist this author in observing and identifying trends. Data trends can then be used to assist project participants with the process evaluation to reduce wait times for fast track appropriate patients to reach the national benchmark of 80-90 minutes for each patient encounter.

Project Purpose

The process improvement project was designed to modify patient flow through a local non-trauma center emergency department (ED). In this department, 35% of the patients are assigned a severity level appropriate for a fast track (FT) setting, as defined by the emergency severity index. The process of having a patient start at registration and progress through triage to the initial assessment by a provider in a faster time frame is the only modifiable factor controllable by the nursing and support staff within the department (Gill et al., 2018). Streamlining the triage process to allow for a prompt patient presentation before a provider is one of three factors that most influence the overall patient length of stay times in an emergency department. The remaining two factors discussed in Gill et al., (2018) the article that influence

the overall patient length of stay (LOS), relate to the times it takes for laboratory and radiology services to be completed and are outside the scope of this project. Nursing procedures or activities do not influence these two factors. The time that it takes for laboratory and radiology results to be completed is based on fixed time constraints of how long these activities take to progress through all necessary steps to have reportable data.

Project Management

Organizational readiness for change. This ED is in an area with a rapidly growing population; this patient population has tripled in the last decade. The hospital itself was granted a Certificate of Need from the state to expand the ED from a 19-bed to a 32-bed department. There will be a designated seven exam areas for the fast track area. This expansion will allow for expanded care and an increased ability to better meet the needs of the community. Currently, the department has an average daily patient census of 130% of the capacity it was designed to serve daily. The expansion project has been placed on hold for financial and logistical reasons over the past few years but, contemporary design plans and budgeting are currently underway along with new executive-level management that supports forwarding progress with the initiation of the expansion project. The redesign of the department will allow for a separation of the FT patients and the main department patients into two different waiting areas. Separation of the patients will allow for a focused assessment and evaluation of less acutely ill patients by the healthcare team assigned to FT each day. This patient separation will ease the number of patients that will be evaluated in the main department. The expectation is that all FT appropriate patients will be evaluated in the FT area.

Discussions regarding the need for a more efficient FT area have been ongoing in the department for more than a year. Both the department and medical director have agreed that

a process change will be ideal to begin addressing the long LOS times in the FT area. The goal of reaching the national standard for LOS time associated with FT will be the benchmark used for this project. Although this benchmark has no financial implications, it has been used as the goal for care times related to the FT area. The national standard is for FT patients to have a total LOS of 80-90 minutes. During the last five years, the department has experienced a surge in patient volume starting from less than the 95 patients per day the department was designed to serve to more than 120 per day.

Interprofessional collaboration. The ED requires a close-knit team where all the players work towards the same organizational goals of excellent patient care and high standards. There are two halves to this team, the nurses, and the support staff side, which includes the nursing assistants, and the provider staff side. The department director oversees the nurses and nursing assistants, and the department medical director oversees the provider half. These two groups of patient care members team up in the FT area to gather all appropriate information for the evaluation and treatment of patients, including the information not collected during the triage process.

Since he arrived in 2017, the ED director has advocated for reducing the FT LOS closer to the national benchmark by improving the interval between patient arrival time and provider evaluation of the patients. Currently, patients evaluated in the FT area are not meeting the 80-90-minute LOS stay goals, often waiting more than 60 minutes for the initial evaluation by a provider. The FT area only sees about 40% of FT appropriate patients throughout the 10-hour day that FT is open. The FT area has only permanent space to evaluate four patients at a time. Once a patient is placed in one of the four rooms, they remain in the room until they are discharged from the department. This is time that a provider can use to see more patients, but the

facility lacks the room space to accommodate a higher patient volume. Most of the patient's time is spent waiting for test results.

Meanwhile, patients are waiting to be evaluated in the lobby. This situation results in a potentially lengthy delay in care for the remaining 60% of FT appropriate patients, which must then be evaluated in other areas of the department — resulting in a decrease in optimal FT utilization. Once triage times can be improved, there will be a rotating room set up for FT, where patients will be examined and then returned to a specific FT waiting room for test results, final diagnosis and discharge — allowing for increased room availability since there will be an expedited patient room turn over occurring.

The current medical director of the ED is also in agreement that a change is needed for the FT area to meet national standard arrival to discharge times. This area's efficiency is not at an acceptable level, and the providers are not being utilized appropriately. The nurse and the provider must collaborate to have a smooth, streamlined system. The leaders of these two groups are working together to assist and improve the efficiency of the FT area. The nursing staff will be encouraged to enter the examination rooms with the providers so that the patient is only recounting their presenting concern(s) one time. The joint evaluation time will allow the nurse to complete the triage information collection process while the provider is conducting their evaluation. Entering the patient examination rooms as a team will encourage a verbal plan of care, preparing the nurse regarding orders to expect about the patient.

Risk management assessment. Strengths, Weaknesses, Opportunities, and Threats assessment was completed (see Appendix B).

Strengths. The strengths of this department are numerous. This ED is in a growing area with an excellent reputation in the community. It is associated with the only local Level 1

trauma center in the county. The ED is connected to the women's pavilion and located next to a medical office building that houses general and specialty care clinics. The ED has had a consistent management team for over two years. This level of stability has allowed for long-term goals and planning for continued growth and development within the department. Associated with the longevity of the management team, nurses and providers staffing in this department have an average of five years of emergency care service. Long years of experience and services increase the probability of maintaining a high level of patient care expertise

Weaknesses. The weaknesses of this department are common to emergency departments (Xu et al., 2019). There has been high staff turnover in this department over the past few years, more than 40% in the preceding two years. Since the current management team has been in place for almost two years, the aspect of turnover has slowed down. Before this management team, the department had four managers/directors in the prior three years and has had more than a dozen since its opening fifteen years ago. The nurses who are drawn to the emergency department tend to have dominant personalities; occasionally, these personalities can become detrimental to the cohesiveness of a functional department; working against unity and continuity that is needed in this high stress changing environment. For positive change to occur within the department, a stable support system between team members must exist. When there are toxic personalities, the staff does not feel supported and are less willing to change or alter their comfort zone and standard behaviors. Continual staff instability resulted in under-engaged staff, a decreased commitment to unit improvement, and lower staff committee involvement; currently, there is no representative from this facility to the organizational level unit council, and the departmental council has not met during this calendar year.

Delays in hospital expansion have contributed to a bottleneck within the department. Limited patient rooms and increased patient population have resulted in extended wait times where patients remain in the lobby and are not evaluated promptly by a provider. The FT area has significant problems regarding the bottleneck effect since, currently, only four patients can be treated at one time. This FT improvement project will need the commitment of the staff to change and engage in the new process to be a success.

The shift start times in the ED are not traditional shifts for nursing with everyone on the staff working a 7:00 a.m./p.m.-7:00 p.m./a.m. shift. There are four other start times between 7:00 a.m. and 7:00 p.m., which include a 9:00 a.m., 11:00 a.m., 1:00 p.m., and 3:00 p.m. start times. The 7:00 a.m. and 7:00 p.m. shift starts are when the daily meetings are held accounting for just 2/3 of the entire staff. Hence, the updated information does not always get relayed to the mid-shift staff members as it does the day and night shift members. This can lead to discrepancies in policy updates or new weekly information that is relayed from the parent organization and departmental management. The final weakness within the organization is that the facility where this project is to occur is the smallest in the organization. The ability to have on-site consultation from various specialties is limited, such as cardiology, neurology, general surgery, gastroenterology. This leads to patients being transported to the main campus facility for these consultations. The organization staffs a mobile transportation unit, but they are chronically understaffed, leaving long wait times for admitted patients to arrive in their assigned room from the ED, or to be transported to the main ED for specialty consultation. The mobile transportation unit has thirty minutes to be onsite to obtain the report and begin the transport of a patient. The average time it takes to get from this facility to the main campus location in thirty minutes. The mobile care team is then allowed another thirty minutes to offload the patient to

their destination and restock any supplies that were used during transport. The final portion of the mobile transportation cycle is the return trip to the facility, resulting in a two-hour time cycle for the transportation of one patient. This issue affects the FT area when a case turns into a more severe condition than is initially presented in triage, and a patient remains in a room for a long time, preventing turnover and the ability to evaluate another patient.

Opportunities. Despite these factors, there are many opportunities for this organization to excel in meeting the national standards for care and performance related to FT benchmark LOS times. The hospital is completing the opening of all the inpatient beds allocated during the initial construction certificate of need, and with that, additional specialty physician practices have opened in the adjacent medical building. These two factors have allowed for some of the patients to remain at the smaller hospital. The opening of all the patient beds will lead to more opportunities for expanded in-hospital consultation related to the demand for these services. The certificate of need has already been granted to the organization for the emergency department expansion, but it has yet to be put into action, resulting in the increased examination room space. The organization is currently planning for expansion from a 19-bed ED to a 32-bed ED, helping to serve the needs of the community. The ED was built to accommodate 95 patients per day. Currently, this department has a daily patient census of more than 120 patients each day. This project will be an area of opportunity for the organization. Expediting the patient population to an area of the department to the appropriate area of the department that will best serve their needs, such as identifying the FT patients, will allow increased throughput. The organization is also in negotiation with a local university medical center to better align the medical care needs of the community. Finally, a major complaint from the FT area is the slow access to an orthopedic

specialist. An orthopedic urgent care clinic is located near the ED, which allows for faster patient access to orthopedic specialty care.

Threats. The last area that a SWOT analysis examines is threats. The most significant threat is the other two healthcare institutions in the area already have a large university medical center affiliation and do not experience the same limited specialty consultation. There is a concern that if this organization is incorporated within one of the university medical centers that it will lose its individuality and become just another part of a major medical conglomeration. Currently, this organization has seven ED's, which all contain a FT area. The process for identifying and treating the FT patients is different in each. It is the hope that if this process improvement is successful, there will be an expansion of the process into the other facilities of the organization. Also, hospital construction will have to occur in order to accommodate the growth of the patient population in the surrounding community, since this ED is no longer able to accommodate high patient volume days with the current number of beds in an appropriate time frame. This is a potential area of concern since the road that the ED is located on is a high traffic area with significant traffic bottleneck problems that occur daily. Construction has the potential to increased traffic may cause magnified traffic congestion problems. Traffic congestion may deter patients from seeking healthcare at the facility during construction. Finally, there was negative press about that organization within the last five years related to fraud. The issues have been corrected, but there is still a negative association with some members of the community. Extensive positive news has been distributed through various media platforms, and the actions the organization has taken to correct the mistakes.

Organizational approval process. The DNP project student leader approached the ED director about collaboration on a process or quality improvement project. His recommendation

was to address the issue of the total length of stay in the fast track area. After working with [redacted] faculty, a project concept was presented to the director who provided verbal and then written approval for the project with full support. There was also a discussion with the medical director of the ED; he also gave positive feedback and offered any assistance with improvement relating to the flow of patients in the FT area. The ED director gave final approval for the project to be carried out. The DNP project student leader also submitted a formal request to the Nursing Research Council for organizational approval, and then the proposal was determined not to need organizational IRB approval and was cleared for implementation. The approval letter and clearance approval will be included in Appendix C. The approval process for the Nursing Research Council involved a form that was completed, and a summary of the project. The review board process involved registering the project through irb.net and completing the required forms.

Information technology. This project will utilize EPIC®, the current electronic medical records system in the organization. There will be no need for modifications within the current system. Epic® will still be used to document triage for all patients. There will be no additional information recorded during the current triage process. There will be less information collected during the triage process for the FT patient, and all information will be collected during the patient visit with the provider, limiting the patient's repetition of information

Cost Analysis of Materials Needed for the Project

The materials for this project are minimal, requiring only a few laminated documents. The department can laminate any items required. A decision tree and required initial information will be placed on the informational paper to be laminated — a negligible cost for this aspect of the project. A small in-service will be conducted before the initiation of the project to explain

the limited information collection for FT patients and where the remaining information typically collected will now be obtained. The project leader will conduct an in-service. It will be conducted during working hours; no additional time will be required for staff.

Additionally, an email will be sent out to the staff members that are usually assigned to triage with the new expectations before the beginning of the project to ensure all questions, confusion, and inconsistency are minimized. Minimal to no monetary costs will be required for the implementation of this project. There will be no increase for nursing and support staff during this project.

Plans for Institutional Review Board Approval

The approval process using the Quality Improvement Self-Certification Questionnaire was completed for [redacted] in October 2019, and full IRB review was waived. Completion of organizational approval was obtained, as discussed in the prior section.

Plan for Project Evaluation

Demographics. No patient or staff demographic information will be collected.

Outcome Measurement**.** Currently, this department treats about 120-125 patients daily. Of the patients that are FT appropriate, only 40% of them are evaluated in the FT area, leaving the other 60% to be evaluated in the main ED. This backlog of patients can lead to increased patient dissatisfaction, an increased likelihood of patients left without being seen by a medical provider, and overall long wait times in the department in both the FT area and the main ED. Since the FT area is currently limited to the number of rooms available, once a patient is placed in the room, it is considered occupied until they are discharged. Once the four rooms in the FT area are filled, no new patients can be evaluated or care initiated; the patients wait until a room is available; currently, the turnover times for FT are 220-240 minutes. The new FT process will

include revolving examination rooms so that all FT appropriate patients will be seen within the FT area. The decreased triage time will allow for patients to be ready for provider evaluation faster than is currently possible. This is a component of the FT redesign that is outside the scope of this project but will impact the ability of the provider to evaluate patients in a more appropriate time frame. The primary logic behind this project is a faster arrival to provider evaluation times in the FT area will decrease the length of stay for each patient in the FT area. Decreased LOS times will allow for an increased number of patient evaluations to occur in the appropriate area of the department relieving the burden of FT patients that need to be evaluated in the department's main area. This will leave the main department fewer patients to evaluate, allowing patients who need more urgent attention to occur faster. The outcome of this project is to have the FT patient total length of stay time approach that of the national average, which is 80-90 minutes. Currently, the department has a total length of stay time for FT closer to 220 minutes. This current time has been determined to be unacceptable; evaluation of prior data determines that a significant rise in left without being seen by a provider occurs once wait times reach 120 minutes. Routinely wait times of 120 minutes or higher occur for the patients designated to be evaluated in the FT area. Collecting the patient arrival to triage and arrival to provider times will be used as the process measures of the project. The outcome that will be measured is the total patient LOS in the department.

Evaluation tool. A visual representation of the data will be displayed in a run chart for each day and week of the intervention. The report will include information about each hour of the day with all patient arrivals, triage level assigned, and time frames (arrival to triage, arrival to provider, and total LOS) as the data points. The electronic medical record generates an average of the wait times. This value will be determined to assist with assessing if the abbreviated triage

for FT patients has been accomplished. A comparison of wait times and patient time intervals collected from FT data from the previous year will also be included in the final report of the project. This information will address if the data has a meaningful impact on patient wait times. Multiple run charts will be generated for each category of time interval using the data collected during the process improvement project. The evaluation will compare data from the beginning to the completion of the project, assessing whether improvements have occurred due to the process implemented in the project. Information will be presented with raw numbers, including the time intervals, the number of patients evaluated in triage and FT, and percentages will be of FT patients related to the entire patient volume of the department.

Data analysis. As discussed, there will be multiple data points collected by this project. Initially, it will utilize averages and raw data of FT appropriate patients to assist in the determination of the effect the process improvement project has on total LOS by improving the time that it takes patients to progress from arrival to evaluation by the provider. The project intends to demonstrate that if a decrease in the time from patient arrival to provider time occurs, then the overall length of stay time will also decrease. This will allow the department to achieve times that are closer to the national average of 90 minutes for FT patients. Currently, there are no local or organizational benchmarks for wait times regarding FT patients. Data points will be evaluated weekly for total LOS times for the twelve weeks of this project.

Data management. The data collected will be retrieved from the Epic® system used by the hospital. Data records will be maintained on the company server, and a copy of the specific data collected will be emailed to the DNP project leader and department Director. It will be stored on the company webmail server. The data is currently received by the Director each week in a report, any additional information that will be required can be requested by the director and

included in the weekly report. The data that is kept by the hospital does not have an end date. The data collected for this project by the project leader will be held until the completion of the project, and then all copies of information will be deleted. No hard copies of the data will be published except for the final product of this project in the form of the run charts.

Summary

This process improvement project will be focused on improving patient total length of stay times in the FT area of one ED by streamlining the triage process, the time it takes a patient to progress from arrival until initial evaluation by a provider. Data of specific time intervals related to the patients' LOS, total daily patient volume broken down by hour, the acuity of patients assigned in triage, and which areas of the department these patients were evaluated will be collected for this project. The data will be analyzed using run charts. The run charts will allow for a visual illustration of collected data, representing trends in the time intervals between patient arrival times and initial evaluation by providers. Ideally, with decreased times, efficiency, and effectiveness will occur. Evaluation of the intervention will then be determined when data is compared to the prior year to assess for changes in the total patient length of stay times and arrival to provider times, which will indicate if increased efficiency of the arrival to provider time frame has occurred.

Chapter Five: Implementation Process

This chapter will lay out the components of the process improvement(PI) project needed for implementation. This project will be focused on modifying the triage process for fast track (FT) patients in an urban, non-trauma center that is a private nonprofit organization. The current staff will be the participants in the project. These participants will attend one of the multiple in-service sessions that will be hosted by the student project leader during the week of implementation. All staff members that work in the triage area of the department will get details regarding the information that needs to be collected at the time of triage. A reference card will be placed in the triage and nurse first (NF) area, which lists the information that needs to be collected for a complete FT triage. PDSA cycles will occur throughout the project to identify areas that are meeting or not meeting the goals of the project and address any issues that have occurred during implementation.

Setting

This PI project will take place in an emergency department (ED). This ED is not a trauma center. The ED is a part of a small 77-bed hospital with a 19-bed ED. It is a private, not-for-profit hospital in central North Carolina. The ED does have residents from three local universities, but the hospital is not part of a university system. The ED is part of a larger organization that includes a total of three hospitals, each with an attached ED, one specialty children's ED, and four stand-alone emergency departments within the county. It is the largest community hospital located within the county.

The ED serves central North Carolina. The county of origin has a growth rate of 1.9% in the last calendar year, and the neighboring county has a growth rate of 2.3% in the last calendar year (U. S. Census Bureau, 2019). Since the hospital is a private, not-for-profit organization, it

serves the needs of all members of the community. The hospital is supported internally by revenue generated from services provided in the form of patient and insurance payments and by a foundation that carries its name.

Participants

Participants in the project were the nursing staff that conducted the triage and nurse first evaluations for the patients as they arrive in the emergency department. The participants were the current staff that had completed the facility's required triage class and had at least one shift of triage orientation with an experienced staff member. These staff members are required to have worked for the organization for over a year or have had more than six months of emergency department experience before being assigned to triage or Nurse First. Annual and monthly audits of triage are completed within the department to assure that all members of the staff are triaging patients accurately according to the emergency severity index (ESI) criteria. Additional education is provided for those staff members who display a deviation from the criteria. The ESI tool is available as a reference guide on all the computers within the department, and it can be used to reduce nurses' uncertainty about the appropriate triage level a patient should be assigned. Staff members excluded are those who have not taken the organizational mandated triage class, those who have not been a nurse for more than a year, and those who have not worked in the department for longer than six months. The nurse will be responsible for obtaining a chief complaint from the patient or responsible party regarding the reason for the visit to the ED. Additional questions that will be asked of the patient will be as follows 1) Have you been seen for a similar problem in the past? 2) Have you received a diagnosis of a similar illness in the recent past? 3) Do you have any significant medical history such as diabetes or immune compromise that may affect your diagnosis and course of treatment today?

The nursing assistants will also be participants in the process improvement project, but their roles will be limited to obtaining initial vital signs, including a weight for every patient. The remainder of their involvement in the project will be to help direct patients to either the FT waiting area or directly into a room for evaluation by the provider. There are no exclusion criteria for nursing assistants. All the nursing assistants that currently work in the department will be included in the study when they are assigned to the triage area.

The final participants will be the collaborative bedside team of the nurse and provider working to obtain the remainder of the triage information, including; past medical history, current medications, previous surgeries, allergies, and immunizations if this information is collected when both the nurse and provider are in the patient room together decreasing the repetition of information provided by the patient. The process now is that this information is asked at least twice during a patient's hospital course, it has been observed that patients can become frustrated when they must repeat the same information for multiple people during a hospital visit. There are no exclusion criteria for the providers and bedside nurses that work in the FT area. All staff members will collect information as needed to have a completed chart by the time the patient is ready for discharge from the hospital. The providers that work in the FT area are contract employees, not facility employees. The process improvement project has been endorsed by the medical director of these contract employees. It will be the responsibility of the medical director to relay information regarding the new FT process and provider expectations.

Recruitment

The participants in the process improvement project who will become engaged with the project include ED charge nurses, and other staff members typically assigned to work in the triage and nurse first area as well as and, employees recommended by the management staff.

Since these will be the nurses that are responsible for assigning the ESI level to each patient, determining an accurate ESI level is essential since only level four and five patients will be assigned to the FT area.

At this time, the participants that will be involved in the project are only aware that a process change will be implemented in January. The ED is accustomed to change, and participants will likely have a positive or neutral reaction to this project. The responsibilities of the triage nurse will not change, but the amount of information that is collected during the time will change. A less fragmented patient throughput will be created for fast track (FT) appropriate patients, requiring less repetition of information collection between patient arrival and the initial provider evaluation. The triage nurses will be able to triage more patients in an hour with the decreased information collected on the FT patients.

There are potential barriers to the project. Since the process improvement will involve changing a current workflow, there will be an expected delay in the narrative most triage nurses recite as they complete the triage navigator forms located in the electronic medical record. This disruption in the nurse's narrative will likely self-correct with repetition for patients that will be FT appropriate. Other concerns are the patients that have never presented to the facility before the current visit. The triage for this patient is always more involved since each item discussed must be charted rather than just reviewed for potential changes. The participants could be concerned that information will not be collected and that it will place a higher burden on the bedside nurse for information gathering. Built within the Epic system is a chart complete tab. It is the recommendation from management that this tab is selected during each visit, assuring that all components of the chart are filled out. The ED director agrees that all the items in the triage tab should be required for a FT visit. However, nurses remain concerned that all the patient

information will not be collected during each visit. The potential for an increased burden on the bedside nurse may originate with the concern for patient volume in the area. There is a potential for seven patients or more at a time. The volume of patients has the potential for overwhelming some of the ED staff. Another potential concern is that information that is needed to make an ESI level determination will be missed during triage with the abbreviated information collection that will occur.

Implementation Process

The implementation process will begin with a short in-service. The in-service will be conducted in the days prior to process implementation. This will provide time to advise all participants of the upcoming changes in the triage process. The in-service will be definitive that the process improvement will only affect those patients that are FT appropriate. The information covered during the short in-service will cover what information will need to be collected during triage and that once a determination of and ESI level four or five established, the remainder of the triage is complete. Information collected to determine an ESI level will include the patient's chief complaint, previous medical issues related to the complaint, prior diagnosis of a similar complaint, and any complicating medical conditions such as diabetes or immunocompromised states. The patient will then proceed to have vital signs and a weight obtained in one of the triage hallway rooms. Lastly, nursing assistant or available staff member will then bring the patient to a FT room, if available, or have the patient placed into the FT waiting room on the electronic tracking board. Emphasis will be placed on having the patient arrive at the provider for an initial assessment in a reduced amount of time than is currently occurring. A departmental email will be sent out to the staff members, informing them of the process improvement.

Finally, reminders of the information that must be collected in triage will be placed on laminated cards and posted in the triage and nurse first nursing stations in the department.

Once the project has been implemented, weekly data reports will be obtained from the facilities' electronic medical record. The time intervals will then be evaluated to determine if there has been a reduction in the time interval of patient arrival to provider evaluation and the overall length of stay for patients in the department. The outcomes will be determined to be successful if there is a decrease in patient wait times and a reduction in the overall length of stay for FT patients. The ideal goal of approaching the national benchmark of 80-90 minutes for the total length of stay for a FT appropriate complaint.

PDSA cycle information will be the evaluation tool used to monitor the success of the implementation project. The PDSA cycle information will be placed in this area of the paper once completed at each two-week interval cycle during implementation. If new staff are available to triage, the project leader will conduct an in-service for that person during the implementation.

Plan Variation

The first day of the PI in-service began with confrontational staff, looks of exasperation, and a lack of interest in another change. As explained in Chapter Six, the variation from the plan of the PI project was extreme. All aspects of the project changed, including the elimination of the need for the modified triage process during the time of implementation.

Summary

The implementation of the improvement project of modifying the triage process for fast track patients will begin in January of 2020. Project participants are current staff members within the ED. A reduced number of questions will be asked during the triage process. Only

enough information will be gathered to assign an ESI level. The patients appropriate for FT will be separated from the main ED patient population and either placed in a room or be seated in an alternate waiting area for only fast track patients. There will be weekly data collection and bimonthly PDSA cycle evaluation to address any areas the need continued modification, clarification, or when unforeseen issues arise.

Chapter Six: Barriers and Obstacles to Implementation

This chapter will present the barriers and obstacles presented during the implementation time of the process improvement (PI) project for streamlining the Fast Track (FT) triage in the Emergency Department (ED). The following will be a timeline of events that surround the outbreak of COVID and the changes within the department, causing an alteration in PI to change management of this project. This project was conducted with the preconception of more ideal conditions that resulted during the implementation phase of the PI project. As a result, the PI project was altered from genuine process improvement to situational change management.

January

The onset of implementation occurred in the middle of the busiest month the project site has ever experienced. There were more than 4,000 patients evaluated in the department in January 2020 ([redacted], 2020). The most experienced nurses staffed the triage and nurse first (NF) positions within the department. Under normal circumstances, these two nurses can complete a full triage and carry out appropriate standing orders for arriving patients. During this time, the volume of patients entering the department was overwhelming. It is not possible to triage 30 patients in an hour. Also, the inpatient beds were full, allowing for little movement within the department. Bed turnover was becoming an issue, with patients who were already admitted to the hospital. Still waiting for a ready room, there was a limited ability for patient turnover in the department. This limited turnover decreased the number of rooms available for new patient evaluations. Consequently, the patients remained in the waiting room and were the responsibility of the triage and NF. It was at this time that the PI project was introduced during a shirt in-service and an email advising the staff of the requested triage modification.

By the middle of January, there had been a new evolving and emerging health crisis in China. The World Health Organization (WHO) and set up an Incident Management Support Team, published the first disease outbreak news, a comprehensive packet about detection, testing, and management of coronavirus patients (World Health Organization, 2020). On January 12, China shared the genetic sequence of the virus (World Health Organization, 2020). Two days later, there was a report from top Chinese officials that there were facing a likely pandemic (Hauck, G., Gelles, K., Bravo, V. Thorson, M., 2020). On January 17, the Centers for Disease Control (CDC) recommended public health screening for entry into the US. The first confirmed US case was identified on January 21. The WHO identified the virus as capable of human to human transmission in a report on January 22, 2020. By the end of January, there were cases in other areas of Asia, Europe, and the US. It was on January 31 that a US public health emergency quarantine was enacted, the first in more than 50 years, regarding travel to China (Hauck, G., Gelles, K., Bravo, V. Thorson, M., 2020).

February

In the PI facility, February began with the announcement that a member of the leadership team would be leaving; the reassignment of her responsibilities was divided between the two remaining management team members increasing their already staggering workload. Behind the scenes, discussions of how to manage a public health crisis began in the organization's upper management. The changes would include modifications to the structure of the ED and the established patient flow through the department. The only area of the department that can be converted into a true negative pressure area are the two rooms that are used for triage. With the looming threat of COVID and the need for negative pressure areas required the adaptation of a different area to perform the triage of arriving patients. This move is not just a simple as

changing the location of the nurse. It means moving supplies, equipment, computers, phones, internet connections, supplemental oxygen, hand washing stations, and emergency response alarm system. These logistics became the responsibility of the department director. Additional concern included increasing the capacity for airborne isolation rooms and where to locate these rooms within the department. The director was focused on the evolving crisis. On February 11, the official name of COVID-19 was announced by the WHO. Just a few days later, increased travel bands were announced. The PI project organization began to evaluate supplies, the new airborne isolation mask system, CAPR, training was suspended due to concern about supplies. The ED was advised to call the infection prevention department and the clinical administrator when a patient presented with influenza-like illness (ILI), they were to be placed immediately into a negative pressure room. The department only had two negative pressure rooms, and there was no available monitoring equipment for these rooms. Also, the sink for hand cleaning after doffing PPE was inside the rooms and not in the anteroom hallway. These conditions made keeping the area used initially for triage unrealistic for a long-term solution to the COVID-19 conditions. By February 21, the CDC announced that there was a likely pandemic, and the US should start preparing. By February 26, there was community spread identified in California. At this point preparation in the facility included extending the wireless capability of the department, setting up tents for triage and treatment of ILI patients, changing the workflow of triage, moving computers moving phone lines, changing supply storage areas, inventory of PPE, real-time training and certification of CAPR use for airborne isolation, policy and procedure changes for ILI patients. There were changes in policy regarding how to screen, isolate, test, what test to perform, how to room these ILI patients, admission criteria that were different for pediatric and adult populations, how to clean equipment, how to clean the patient rooms, and staff self-

monitoring. Again, these are just some examples of the behind the scenes planning that occurred amid the evolving pandemic which took the full focus of the department management staff away from ongoing process improvement.

March

On March 3, the organization began to perform a travel screening in triage. This continued to impact the triage nurses away from the intended modification by adding another step into the triage process. The next day the department began to screen the general public and visitors of the hospital. By March 6, there were electronic resources added to Epic®. At this time, these resources were from the NC Department of Health and Human Services (DHHS). The NC DHHS is where all the initial information and screening forms that were provided at discharge originated. However, there was extra information that needed to be collected and faxed to DHHS for tracking purposes and testing results. Data collection and faxing were not a streamlined process and only lasted about two weeks until it was abandoned due to inefficiency and complexity. On March 10, the organization set up a command center for COVID-19 concerns.

Mid-March was also the time when the DHHS and CDC made the recommendation for all patients that were experiencing ILI symptoms to not go to an emergency department and first to be evaluated by a primary care provider. Once this announcement had been made, the daily patient volumes in the department plummeted. There was a decrease of 60% of patients that arrived in the department. As a result of the severe patient volume decrease, the department was able to take patients directly to a room when they arrived, eliminating the need for a modified triage process. The FT area of the department was closed, further eliminating the need to modify the triage process and separate patient population into FT appropriate and not appropriate.

On March 11, the WHO announced that COVID-19 had now become a pandemic, and China had experienced a 13-fold increase in cased over a two-week period. March 13, President Trump declares a national emergency, four days later, he invoked the National Defense Production Act for the manufacturing of needed PPE and hospital equipment to combat the crisis of COVID-19. By March 18, there was a report CDC that stated no new domestic cases in China were reported, but that all age were at risk in the US (Hauck, G., Gelles, K., Bravo, V. Thorson, M., 2020). The global impact of the novel virus continued with the postponement of the 2020 Tokyo Olympic announcement. By March 26, the US had surpassed China in the number of cases.

As this was a University sanctioned project, there was a decision to stop all clinical site experiences on March 18, 2020. Thus, leaving the project incomplete and without closure.

Chapter Six: Evaluation of the Practice Change Initiative

The initial process improvement (PI) triage change began during the busiest month the facility had experienced in its history; this Emergency Department (ED) evaluated more than 4,000 patients in January 2020. Less than a month into the project, the department had the two highest patient census days since opening more than 15 years ago. Unfortunately, less than eight weeks into the project, COVID-19 began to affect the patient census numbers, and daily volumes began to drop significantly. The department began to have numbers that were less than half of the average volumes. Unfortunately, the project data n was not received during the agreed-upon timeframes, which resulted in a limited ability to perform PDSA cycles, likely due to the resignation of a management team member at the end of February. During the initial onset of COVID-19, the organization dramatically changed its focus, which was quickly placed on adapting healthcare in the time of the pandemic. The project was terminated before the intended timeframe. Due to the low patient census, the fast track (FT) area was not utilized, and a formal triage for patients outside of the main emergency department ceased.

Participant Demographics

The participants in the project were the nurses that worked in the ED. Participant inclusion criteria were that they had worked in the department at least six months and had been a nurse for at least one year. The participants were the staff members that worked in the triage and nurse first (NF) areas. The participants were the nurses that determined if a patient met FT criteria. The nurses ranged in age from 25 to 66 and had between one and more than 20 years of experience. All nurses in the department that met the criteria were potential participants in the project. Below is a table that compares pre- and post-COVID staffing numbers for the nurses

and providers. Participants' identities are kept confidential. The DNP Project Data Collection Tool was used to collect demographic data. See Appendix D.

Table 1

Staffing Levels Before COVID-19

Time	Nurses		Time	Physician	APP
7a-7p	5		7a-3p	1	
9a-1p	2		7a-5p		1
11a-11p	2		10a-8p		1
11a-3p	1		2p-12a		1
1p-1a	2		3p-11p	1	
3p-3a	2		4:30-12:30	1	
7p-7a	5		11p-7a	1	
			8p-6a		1
Maximum staff from 3p-11p is 11			Maximum staff from 4:30-11p is 5		

Note. Above are the shift times and staffing numbers for nurses and providers at the organization where the PI took place. Based on the patient census, staffing begins to increase at 9 a.m., and staffing levels decrease after 11 p.m.

Table 2

Staffing Levels After COVID-19

Time	Nurses		Time	Providers	APP
7a-7p	4		7a-3p	1	
11a-11p	1		8a-4p		1
1p-1a	1		11a-8p		1
3p-3a	1		2p-12a		1
7p-7a	4		3p-11p	1	1
			11p-7a	1	
Maximum staff from 3p-11p is 7			Maximum staff from 12p-12a is 4		

Note. After the severe decrease in the patient census, the staffing numbers for both nurses and providers. There was a net loss of 4 nurses and 1 provider. This time also included the closure of the FT area.

Intended Outcome(s)

The PI project set out to streamline the triage process to decrease the time between arrival and triage for patients in the FT area. This aim was twofold, the first being a reduction in patient information collected in triage with no change in the accuracy of the triage level assigned. The

second aim was to enhance the department's ability to have a patient evaluated by a provider in a decreased time frame. The decreased arrival to provider time was the identified short-term goal for the project. The department director had expectations for the triage process to be completed in a 4- to a 6-minute timeframe for each FT patient. Another short-term goal resulting from shortening the triage times was the reduction in arrival to provider times for all FT patients.

An intermediate goal for the project was to decrease the total length of stay (LOS) for FT patients in the ED. The total length of stay is defined as the time it takes to progress from arrival to discharge from the department. This was the intermediate goal since modifying triage would indirectly influence the providers' ability to place orders and perform interventions. Another intermediate goal is to assure consistency within the triage process by the project participants. This goal could not be evaluated within the project timeframe due to the lack of data provided by the site champion.

The long-term goals for the project included the ability to maintain the streamlined triage process, continued reduction of LOS to achieve national benchmark times, and increased staff and patient satisfaction. The ability to maintain streamlined triage changed with the onset of COVID-19 and the subsequent decrease in patient census. The "nurse first" position was eliminated. The FT area was closed and had not reopened at the time this paper was written, roughly 15 weeks after closure. All patients are now evaluated and treated in the main area of the ED. Triage is now being performed in patient rooms rather than in a centralized location. The national benchmark for FT patients is 80-90 minutes. The average LOS for the initial 2-week interval of the PI project was 148.5 minutes. The final long-term goal included improved patient and staff satisfaction. Patient satisfaction is collected at the organizational level by an independent third party. This information is disseminated to the organization quarterly. Staff

satisfaction is collected formally in annual surveys and informally by an increase in the staff willing to work in the FT area. FT was not the most desirable area to work in the department. From informal consensus before revisions in the department, FT was a tedious area to work in with significant downtime and low patient turnover once the area was full. It was the area that often-had newer providers and new nurses. Ideally, this area should be staffed with more seasoned staff to increase turnover and allow for independent work. Another informal way of identifying increased staff satisfaction comes from departmental staff meetings and twice-daily shift huddles. During the departmental staff meetings, a round table topic was included to allow for staff to voice concerns, rumors, positive acknowledgments (Kudos at this organization), and any other issue they perceive are occurring at the time. The daily huddles include information that is disseminated from management to the staff; also, it includes areas of daily practice focus.

Findings. The Emergency Department FT project began in the middle of the busiest month of the department's history to date. The record patient volumes presented unforeseen challenges to shortening and maintaining reduced arrival to triage times. The NF and triage nurses were unable to maintain the management goal of four to six minutes from patient arrival to triage. A delay in triage resulted in additional patient wait time in the department. These delays were evident in each measured time category. Delayed initial provider contact with patients resulted in overall longer LOS. All of the measured FT time intervals increased when comparing January 2020 to January 2019. There was an increase of 13.5 minutes in initial provider-patient contact, while the overall LOS increased by only eight minutes when compared to 2019. If the arrival to provider time interval were subtracted from the total LOS, January 2020, LOS would be 92.5 minutes, which is the closest to the national benchmark the department has achieved.

Table 3

Data Generalized to Entire Department

DATA ENTRY FOR PI PROJECT					
Month 2019	Number of patients seen	Arrival to Triage time	Arrival to Room	Arrival to Provider time	Total LOS
January	301	5	30	42.5	140
February	452	6	35.5	45	142.5
March	258	7	26	37	128
April	260	7	31.5	46	136
Above Information for Comparison Only					
DATA RECEIVED FROM SITE CHAMPION					
Date	Number of patients seen	Arrival to Triage time	Arrival to Room	Arrival to Provider time	Total LOS
1/13-1/31/2020	375	8	37	56	148.5

Note. Received data from site champion. The information at the top of the chart are from 2019. The bottom chart is the information from the FT area during the first 2 weeks of the PI project received from the site champion.

The remaining information was based on data that was nonspecific to FT, and that incorporated the entire department. The data collected after January 31, 2020, was different from the initial data metrics requested due to changes in the management team and staffing of the department and the outbreak of COVID-19. Early COVID-19 alerts were published by the Centers for Disease Control (CDC) on February 14, 2020 (Johns Hopkins University and Medicine, 2020). After that date, patient census numbers decreased immediately; however, a spike in patient volumes was noted from the end of February until the beginning of March. The daily patient census plummeted to totals not encountered after year upon year increases in the patient census following numerous travel restrictions and CDC advisories.

Daily Census

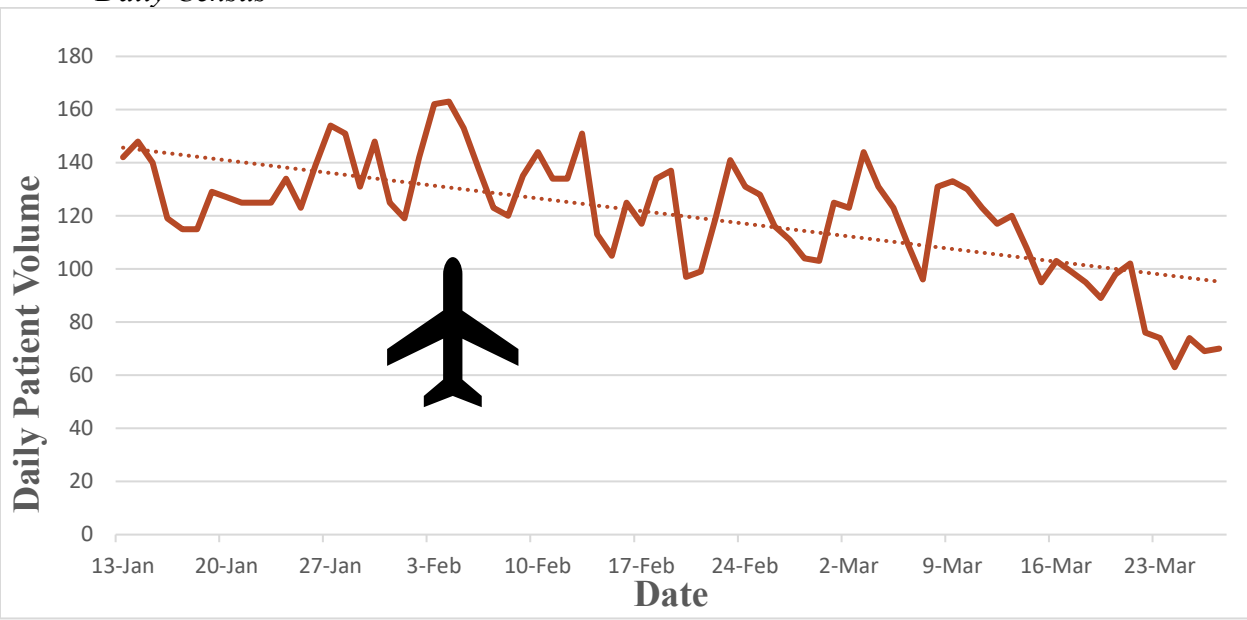

Figure 1. The airplane icon indicates the initial travel advisory related to COVID

The site champion did not convey the remaining data collected during the project implementation stage, but rather it was collected from weekly information published to the entire department. The data available included only weekly mean and median values for each category: arrival to triage, arrival to provider, and total LOS. No standard deviation information was available for the weekly data.

Table 4

Breakdown of Data Collection

INFORMATION INCLUDING ALL AREAS OF THE ED						
Week Ending	Arrival to Triage		Arrival to Provider		Total LOS	
	Mean	Median	Mean	Median	Mean	Median
Week 1	9	6	58	43	189	180
Week 2	7	5	32	25	166	153
Week 3	9	6	46	36	175	162
* Week 4	11	8	49	43	182	164
Week 5	9	7	50	40	179	164
Week 6	8	6	36	25	173	161
Week 7	8	5	51	32	190	172
Week 8	8	6	50	31	179	160
Week 9	9	6	37	26	170	146
Week 10	7	5	19	15	154	139
Week 11	7	6	17	13	155	131
*has the 2 highest census days ever for the department						

Note: Information that is representative of the department as a whole and is not specific to FT.

A measurable outcome of the project was a trend towards a decreased triage time that approached the departmental requested arrival to triage time to average less than six minutes. One confounder is that it is not known if the decrease in the triage times was related to the streamlining of the triage process or related to the reduction of the patient census. The acuity of the patients changed during the implementation timeframe. Decreased acuity resulted from the onset of COVID-19 and public concern for COVID-19 exposure in the ED. Thus, the FT area was not open for most of the project implementation period because there was not enough patient volume to warrant the staffing of that area. Also, staff feedback was not collected during the project since the organizational focus shifted to the pandemic. At the onset of COVID-19, altered policies and procedures were rapidly deployed and implemented organization-wide. New policies and procedures are detailed in Appendix E.

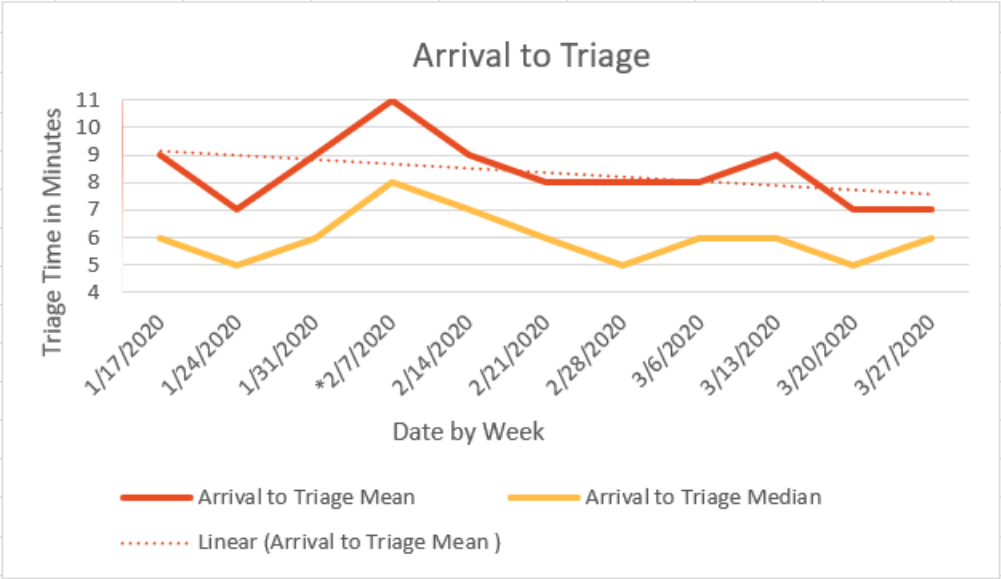

Figure 2 Mean and median difference for patient arrival to triage times. The dotted line shows the trend towards a decreased time for this interval. The tallest spike correlates with the week of the patient census of more than 160 patients daily. Indicating that triage was the initial delay of patient progression in the department.

Summary

The original outcomes and findings could not be measured due to the COVID-19 pandemic. Multiple unexpected factors influenced triage times during project implementation. Early in the project, triage was intermittently delayed for more than 45 minutes because of the massive patient influx. The COVID-19 pandemic began one month into the project. This unforeseen global event now changed the focus of the department from process improvement to survival mode, through rapid adaptation and implementation of departmental strategies and training surrounding the isolation, evaluation, and treatment of the COVID-19 patient population.

As the project was no longer a priority for the department, data was not collected, and the expected implementation modifications were altered to assist with the rapid deployment of COVID-19 information dissemination. Updates regarding how to isolate, where to place potential positive patients, algorithms for testing, and admission protocols regularly changed following updates from the CDC and the parent organization. Multiple unforeseen events occurred in the implementation stage of the project. These changes required the intended/planned project to be placed on hold.

Chapter Eight: Implications for Nursing Practice

There are eight essentials for Doctor of Nursing Practice education, as defined by the American Association of Colleges of Nursing (AACN). Each of these essentials is integrated into this process improvement project. The essential will be individually defined and related to the project, reflecting their impact and guiding principles for development, planning, implementation, and information dissemination.

Practice Implications

Essential I: Scientific underpinnings for practice. Essential I is the basis for the project. As the nursing field progresses, there is an increased emphasis on evidence-based practice. This principle helps to guide why specific interventions are more productive, how better patient outcomes are achieved, and where the opportunities exist to establish future nursing knowledge. A review of the literature was performed; common themes were identified regarding ways to decrease the length of stay (LOS) for Fast Track (FT). The ability to translate the themes into potential functional improvements assisted the project leader in presenting potential ideas to the department director before the initiation of the process improvement project. The process improvement project presented here began with the idea that the emergency department was not utilizing the FT area to its full potential. Patients that were being evaluated and treated in this area had total LOS times of three to four hours, though the national standard is 80-90 minutes (McCaig, L. & Albert, M., 2014).

The review of the literature resulted in several approaches to decrease the LOS. The triage area was selected for the process improvement. Previous process improvement projects had modified this component of the emergency department (ED) visit with positive results on

decreasing overall LOS for patients. Triage is also an area that is solely nurse-driven and a place that the staff could make a significant impact on the patient's visit

Essential II: Organization and systems leadership for quality improvement and systems thinking. This essential addresses the overall approach to process improvement from a leadership perspective regarding that, modification within the current system is ideal, not inventing a whole new system for triage. The facility where the process improvement (PI) took place has been increasing in patient volume over the last number of years. An improved approach to treating FT needed to be addressed to maintain departmental throughput. Throughput in this situation is the patient's progression from arrival to discharge in the ED. The PI project was designed to decrease the amount of time from registration of the patient to be ready for provider interview and evaluation. From the review of the literature, a strategy was identified for reducing total LOS. The more quickly that a provider can evaluate a patient, the more quickly orders can be initiated and completed to prepare the patient for discharge. The PI project was accomplished by developing a reduced triage question format that applied to FT appropriate patients.

Streamlining the number of questions during the triage process to achieve an accurate Emergency Severity Index (ESI) number maintained the accountability for quality healthcare and patient safety for populations that the department served. Another aspect of streamlining the questions eliminated information that did not directly impact the current chief complaint of the patient during the encounter.

From a systems think approach, multiple disciplines affect a patient during their hospital encounter. All the disciplines need to work as a cohesive unit to optimize a patient encounter. The laboratory, pharmacy, or radiology department will not be able to complete a task without an

order from a provider. The revised triage decreased the time a patient was in the department without being evaluated and orders placed in the electronic chart. Leading to multiple departments being able to complete tasks sooner since the orders were available in the system. Using the evidence that was collected during the literate review, using the guidance of AACN Essential I, an initial discussion of potential interventions were presented to the department director. Incorporating a holistic foundation of quality improvement and a systems think approach, the process of patients progressing from registration to readiness to see the provider was selected as the area that could have the most significant impact on the department. This PI would be implemented without causing the need for system-wide redesign or altering aspects of each department's contributions to the care of the patients.

The hospital is a business, and the cost must be a consideration of any change that occurs. A goal of this PI was to have an intervention that did not create an increased cost to the department. This goal was accomplished by using the staff that was currently employed and only required a short in-service that was completed during regular working hours. No additional equipment or resources were included during the PI.

Essential III: Clinical scholarship and analytical methods for Evidenced Based Practice (EBP). Essential III was achieved with the application and interpretation of data collected for the initiation of the process improvement project and how to apply the information as EBP for continued improvement. As previously mentioned, an extensive review of the literature was conducted at the inception of this project. During this review, common themes were determined by the project leader. The topics identified included modification of the physical structure of the department to differentiate FT patients from the remaining patients requiring emergency services, a decrease in the time from patients' arrival to the provider, and an

increased number of staff to accommodate a higher demand on personnel resources. After an informal presentation of ideas with the department director about potential solutions found in the literature, the one that was solely nurse-driven with the ability to affect the times from patient arrival provider evaluation was selected.

The guidelines established by the Emergency Severity Index (ESI) criteria do not include the quantity of information that is required during the current triage process by the facility where the PI project occurred. (Gilboy, Tanabe, Travers, & Rosenau, 2012). Evaluating what information is necessary for collection to achieve the ESI level can be applied to meeting this essential. The ESI is a triage approach that is utilized in America and is endorsed but accrediting organizations.

Using only the time intervals for patients in the FT area allowed for analytical evaluation of PI impact on the department. Time intervals from pre- and post-intervention will be evaluated analytically to determine if the project influenced overall LOS within the department.

Lastly, this essential was met by the project with the use of the facilities Epic® medical records system. This system has features that can be used in a database form, allowing users to produce reports about specified patient data. The computer system was utilized in this fashion to generate information collected about patient times.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare. At this healthcare facility, the electronic medical record is Epic®, which is used to maintain patient data, clinicians' interventions, orders, and documentation, and can then produce volumes of data on request. Epic® can indicate patients' progression through the various stages of the system via a color-coded indicator. The color-coded system enables nurses to have real-time awareness of patients' LOS at each stage of

the encounter, as well as the total time per patient within the department. The information was conveyed by the departmental director, to the project leader. This system allows for real-time tracking of patient LOS. The triage area can be assisted with more staff, or staff can be directed to help discharge patients depending on the needs of the department by utilizing this technology. Accessing and using this quantitative data to assess patient throughput can contribute to reduced patient LOS, improve department efficiency, and possibly influence patient and staff satisfaction. Using this easily accessible data reduces the likelihood that actions and interventions will be based on perceived issues and will instead be founded on data that can accurately influence action.

Essential V: Healthcare policy for advocacy in healthcare. There has been patient feedback from organizational level surveys that includes patient frustration with the repetition of information with each new staff member that they encounter (Gardner, Friedman, Carlson, Bradham, & Barrett, 2017). As a DNP prepared nurse, the delivery of healthcare and policies that influence the care of patients has become increasingly apparent. The PI project leader was able to take the perspective of the patient, nurse, and provider to address where opportunities for change and improvement existed. The ability to perform education and conduct conversations about the reasons why a change was requires allowed for increased leadership within the facility to the department staff. Influencing the scope of what information is needed from triage was influenced by the advanced education provided during the DNP curriculum—allowing the project leader to have conversations with the medical providers of the department and analyze what information they determine as required for an appropriate triage. Then taking that information and creating a PI that assisted in delivering care to the patient population in an improved method where all parties, the patient, nurse, and provider have their goals achieved.

There is the potential to utilize this more streamlined process of triage in the remaining emergency departments within the organization. Once a procedure is established, and results prove positive for decreasing overall LOS times, the streamlined triage process could be across the parent organization.

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. The dynamics of the ED is a unique environment for close communication between support staff, nurses, and providers. The providers are always in the department throughout their shift and work closely with support staff and nurses. Frequently orders and patient updates happen during interprofessional conversations, unlike an inpatient unit where there is a provider on call or assigned to the area but are not physically located in the area during their shift. The ED providers are amid the events occurring in the department, sitting in the same space as the nurses and support staff. Since the immediate intervention of patient care issues can be addressed, and improved workflow can be expected while open interprofessional communication occurs. Providers can rely on support staff and nurses and vice versa when in the FT area. The geographical space of the area leads to physical closeness, and the ability to discuss the patient plan of care goals. The close working relationship also allows for a member of the patient care team to seek assistance and create change in the delivery of healthcare of each patient.

Essential VII: Clinical prevention and population health for improving the nation's health. This PI project does not apply to clinical prevention since the project relates to patients that are arriving in an ED requesting to be treated for a current specific issue. This essential was met in the context of improving the population health since the ED is used as a primary care office by patients that do not have a primary care provider (PCP). As the patients are triaged

information is entered into the Epic® system, a referral can be placed in the patient's chart at discharge to assist them in finding a PCP for future and continuing healthcare needs.

Essential VIII: Advanced nursing practice. This PI project began using information from previous nursing research about various tactics to improve ED efficiency. Incorporating information from nursing research, cultural, economic, and biophysical fields of study, the PI was constructed to make the triage and patient identification of FT appropriate patients more straightforward and more time-sensitive. The FT patients are the segment of the ED population that should require the fewest departmental resources, which is the economic impact of the project. If the department can decrease the LOS for the patients in this area, it will allow more patients to be seen per day in the FT area, decreasing the volume of patients that are evaluated in the main area of the department. Cultural and biophysical aspects are incorporated into the PI project by refining the questions and information that was needed for obtaining an appropriate ESI level. Pulling these various fields of study together prepared an environment to refine advanced nursing practice skills for the project leader. This is the essential that applies to the entirety of the project. While constructing and implementing this process improvement project, opportunities for growth and increased nursing education were available and utilized by the project leader. The ability to explain why and how the triage process sets the tone for a patient visit, inform colleagues of what the national standards for FT LOS, deciphering what information is needed and what information is extraneous to accurately identify an ESI for initial patient placement in the department. This essential demands that the evidence drives positive change. The position of advance practice encourages interprofessional collaboration, which was vital to the process improvement project. It was necessary to include management, providers, nurses, and support staff with each change of the triage project (Celona et al., 2018).

Summary

This chapter has explored the eight essentials as they apply to this of the DNP nursing PI project. Each has been achieved during the development, planning implementation, or information gathering aspects of the project. As future nursing leaders, these essentials will assist in ensuring continued improvements and practice will occur within the healthcare systems. That advanced practice nursing will continue to add academic, practical, and theoretical knowledge. These essentials were used and influenced decisions about the evolution of this process improvement project, starting back at what would a process improvement project contain and intend on influencing through to the stage of how can this information and process change bring greater understanding to future nursing practice.

Chapter Nine: Final Conclusions

This section will contain the outcomes and recommendations for continued enhancements within the process improvement (PI) project concept and execution. There was no predictable or stable environment during the implementation of this project, which contributed to the lack of full execution of the intended PI project. Still, there was also extreme variation in patient census, which made the implemented process change either very challenging when attempting to maintain on orderly triage of 163 patients per day or unnecessary when census numbers were in the fifties. The fast track (FT) area remained closed for more than ten weeks. The merit and need for the project remain as patient volume numbers increase closer to a pre-pandemic level. The PI should be reintroduced, allowing nurses to incorporate this change into their triage assessment language.

Significance of Findings

Several unforeseen circumstances influenced the outcomes of this project. The implementation date was predetermined. In retrospect, the first three weeks of the PI project occurred during the highest patient volume weeks ever experienced by the department. The PI requested the triage nurses to modify an existing process that was very ingrained and routine since the same information-gathering questions were asked of every arriving patient for multiple years. The limited collection of PI data did not allow for the evaluation of the project's clinical significance. However, when speaking to the project participants informally, the overall feedback was that limiting the patient information collected during triage would be beneficial for departmental throughput. The minimal collected data revealed that there was a saturation point, coinciding many patient arrivals affected triage's ability to maintain the desired throughput times. The data also highlighted the converse of this; when patient volumes were low, the triage

process met or exceeded the desired throughput times. The PI project should be reintroduced to the department during a time of year with traditionally lower daily patient volumes and stable staffing numbers allowing for a focus on process improvement.

The project participants were tasked with a process change during the busiest time of the year. In hindsight, the timing was not ideal. The change needed to have occurred when the participants would have the ability to focus and incorporate the process modifications into the triage evaluation. There were days during this project when triage would have more than 30 patients check in each hour—resulting in significant delays for completing triage regardless of any new streamlined process. These delays were reflected in the arrival to triage times that lengthened to an average of 11 minutes per patient. The department was subsequently impacted by the overall longer total length of stay (LOS) times.

Implementing this PI project at the organization's six different emergency departments would be very straightforward. The organization uses the same triage scale and Epic® system in all locations. Adopting the modified Fast Track (FT) triage developed for the PI project could be implemented without the need for additional modifications or expense. The same short in-service would be conducted in each location. Increased consistency of the modified process would allow for all patients to be divided into FT appropriate and not FT appropriate patients.

Project Strengths and Weaknesses

The PI project strengths were the ability to maintain appropriate patient care and safety while decreasing the LOS for each patient. The ability to have a patient ready for initial provider evaluation promptly after triage affected the subsequent LOS. The early evaluation resulted in earlier order entry to Epic® for gathering of supplies required for procedures, radiology tests, laboratory tests, and point of care testing. Receipt of orders allowed for the initiation and

completion of tasks with minimal delay. Prompt triage evaluation for FT eligibility increased the throughput of this patient population. Another strength was that this PI project could be implemented with no cost to the organization. It does not require a change in personnel, equipment, technology, or physical building restructuring.

A weakness of this project revolved around the departmental barriers at the onset of implementation. The department where the PI project occurred was in the middle of the busiest month on record. As a result of the high patient volumes, completing established job requirements was challenging for the staff. Adding a process modification during the busy month of January 2020 was unreasonable at certain times. One nurse could not triage the hourly patient volumes when arrivals of more than 25 patients per hour were occurring. Asking the nurses to change their established and familiar process while they were falling behind relative to patient arrivals was unsuccessful. The request for the modified triage process was secondary to completing established patient triage.

Another weakness of the project was the ability to gather requested-data. This weakness was multifactorial. The management team lost a member during implementation, and another member had a personal emergency leaving only one management team member to guide the department during this time. Additionally, the project implementation time coincided with the appearance of COVID. The department director was involved with organizational level pandemic planning taking him away from daily oversite of the department. During this time, physical building modifications were also required to meet the recommended isolation requirements. The director was invested in planning and supervising these physical alterations within the department. Organizational updates revolving around COVID were disseminated in real-time, the director was again responsible for assuring that these updates were implemented

appropriately. Given the director's additional responsibilities and the intradepartmental management changes, lower priority was assigned to process improvement, which included PI project data deliverables. The unprecedented ramifications of this virus also resulted in the early termination of the PI project implementation.

Project Limitations

The most significant limitation of the project was the patient census. At the onset of the project, census numbers fluctuated from the largest on record to the lowest number of patients the department has experienced in years. Within the same month, the department experienced extremes from 163 patients per day down to only 50 per day. Furthermore, the COVID pandemic recommendations from national organizations stated that the public should avoid Emergency Departments visits. This recommendation caused a severe reduction in the number of patients presenting to the ED for evaluation. Due to that decrease in patient census, fast track was not open during the pandemic, thus, eliminating the need to modify the triage process to determine the appropriateness of FT patients. Instead, all patients were evaluated in the main area of the department.

The project was additionally limited by staffing. During the exceptionally high-volume times, there were not enough triage nurses to keep up with patient arrivals, and then after the onset of COVID, there was too much staff. Staffing was reduced from a maximum number of eleven nurses down to six nurses. The closure of the FT area also affected the need for the number of providers within the department; the FT provider position was altogether eliminated during this time.

During the onset and spread of COVID, there were continuous updates about numerous policies. These policies included topics such as whom to isolate, type of isolation required,

testing that needed to be completed, admission requirements, staff screening restrictions, staff reallocation, the potential for tent testing situations, physical alterations to the department such as airflow redesign, IT infrastructure upgrades to allow for expanded wireless use, new equipment storage, new equipment utilization, and cleaning of patient rooms and equipment. Given the influx of new information during the planned implementation time, the PI project was no longer a priority for the department. The staff was taxed with the assimilation of new policies and procedures daily, adding another change to an already changing environment was deemed to be inappropriate at this time.

Project Benefits

The project benefits were still theoretical, given the insufficient data collected. The streamlined triage process could have increased the throughput of the department. The first opportunity for improvement was a faster triage of non-urgent patients. The second benefit was a quicker arrival to provider time interval. The shortened time interval for provider evaluation resulted in earlier initiation and completion of provider orders. This final result was a shorter length of stay for each fast track patient. Another benefit was that it would take no financial resources from the organization to implement. The project would utilize the existing electronic medical record. No additional staff would be required for the implementation and sustainability of the PI project. Potentially the department would see a rise in monetary compensation with the ability to treat a higher volume of patients and increased patient satisfaction scores for those that were discharged in an appropriate time frame from arrival to the department.

Practice Recommendations

The PI project discussed in this paper could significantly assist the triage process for the ED. It should be reintroduced at a more appropriate time when staffing numbers and patient

volumes return to a stable level. The purpose of the project was to help differentiate patient population needs in an overly burdened emergency system. The recommendation to introduce a project during the busiest timeframe of the ED year was not ideal in retrospect. The onset of the COVID pandemic further compromised it. The project could create a more streamlined flow for FT patients and assist triage nurses in moving the arriving patients into the department more rapidly. It would assist with the identification of those patients that need minimal to no resources within the department, resulting in the nurses having more time to dedicate to patients that are indeed having a medical emergency. The impossibility to predict the impact that COVID has had and will have on the healthcare system continues to unfold as we progress through the remainder of 2020. Patient census numbers have not returned to pre-COVID volumes, and the daily routines within the department are still evolving. The healthcare staff remains at risk of contracting the virus. Until the impact of COVID is better understood, process improvement that does not have a direct relatability to COVID will be delayed.

Once the PI has been reintroduced and positive results of decreasing arrival to triage times, arrival to provider times, and overall length of stay times are determined, the project can be quickly introduced to the remaining emergency departments within the organization. The same short in-service can be conducted, and the PI will have an impact on all the ED patients served by the organization. The patients served by the organization may have increased satisfaction when there is a swift differentiation of urgent versus non-urgent patients. The patients waiting in the main ED area will no longer be able to visualize the more rapid treatment and turnover of FT. While patients wait in a general waiting room, they often assume that all patients are treated in the order of their arrival. When, in fact, patients are treated based on the acuity of presenting symptoms, hence, avoiding the misconception that other patients are being

seen before them when, in reality, the FT area is set up to evaluate and discharge patients with non-urgent care needs rapidly.

Final Summary

The inception of the PI project began with the intent to assist the ED with extremely long FT length of stay times (LOS). The need for the modified triage process resulted from the increased ED patient volume due to an increased patient population surrounding the facility and the shift towards ED utilization as a primary care environment. A literature review and analysis identified three factors that affect LOS; time to initial provider evaluation, time for laboratory results, and time for radiology results. The only one of these factors that could be solely driven by the nursing staff in a facility is the ability to decrease the arrival to provider time by creating a more streamlined triage process. The modified triage process only impacted FT appropriate patients. The triage modification reduced the amount of required information gathered by reducing the intake questions from more than 20 to just four. This reduction in initial information gathering eliminated redundant questions for patients throughout their ED encounter.

Unfortunately, the PI project was begun during the most extreme time the department had experienced since opening more than 15 years ago, the busiest month, followed by the two busiest days, followed by the outbreak of COVID, altered the implementation phase of the PI project and, consequently, the results of the project. Once the COVID pandemic began, there was a significant decrease in the patient census at the facility, resulting in the FT area not being opened. Since the FT area was not utilized during these low patient volume times, there was no need for an altered triage process. However, the value of the PI project remains and should be restarted when the department is no longer operating in crisis mode; and when patient volumes

have returned to a stable level. The PI project attempted to address decreasing the time it takes for a patient to progress from department arrival through triage and on to provider evaluation. A secondary goal of decreasing the time from arrival to facetime with the provider was to improve the overall LOS times for patients by aligning them more closely with the national average for FT.

Additionally, a key advantage of the PI project was that it did not require any additional monetary resources from the organization and continued to utilize the existing electronic medical record. This advantage would allow for the rapid deployment of the modified triage process to the additional ED's within the organization. The triage streamlining would assist in expediting non-urgent patients presenting to the department. This is the first link in reducing the overall LOS for FT patients.

Process improvement leads to positive evolution within the organization. The flexibility and adaptability of an ED hallmarks the opportunities for growth and development for improving patient experiences. The PI undertaken in the project attempted to address one of the areas for improving patient experiences. Once reintroduced, systematic evaluation of impact can be determined, the project can be modified to produce the desired results of a decreased arrival to provider times, or it may discover that no impact was made regarding this data metric. The hope is that by decreasing the patient LOS, there will be an increase in patient and staff satisfaction, resulting in better experiences for all persons involved.

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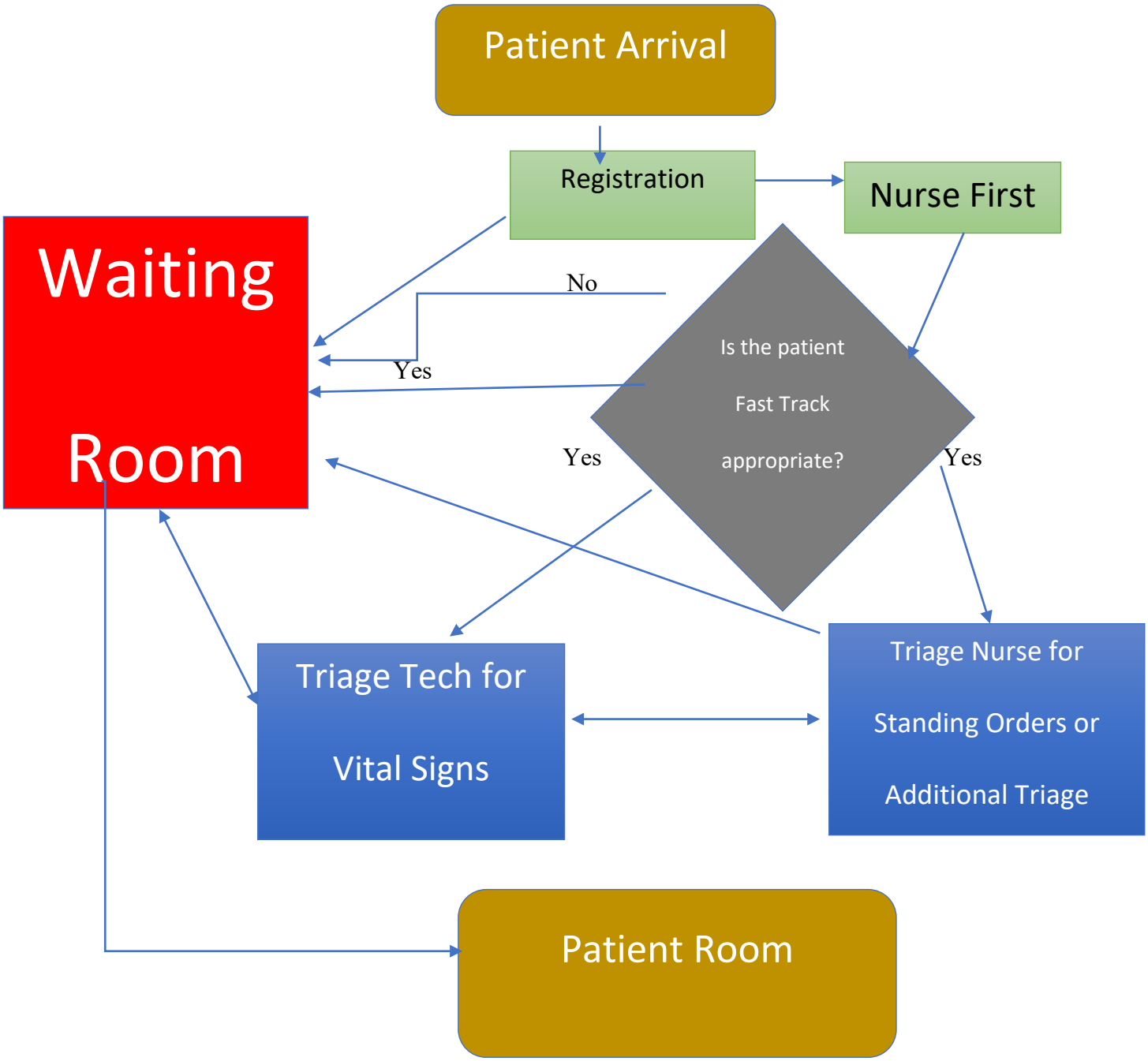
Appendix A

Flow from Arrival to Patient Room



Appendix B

SWOT Analysis

INTERNAL FACTORS	
STRENGTHS (+)	
1	Growing patient population
2	Profitable Emergency Department
3	Stable Management Staff for greater than 18m
4	Resource redistribution
5	Some very experienced staff memebers
6	Good reputation in the community
7	Positive Tennants of behavior
8	Area level 1 trauma center
9	Cardiothorasic innovation
10	Dedicated women's pavillion
11	Only Children's specific ED in region
12	Leader in Nursing Education at local and national conferences
13	

INTERNAL FACTORS	
WEAKNESSES (–)	
1	Variable staff
2	Continuing change for simple processes without notification
3	Lack of involvement of staff in committee
4	Staff turnover
5	Variable shift times, poor information communication to all shifts
6	Toxic personalities in department
7	Ineffective leadership
8	Ineffective exectutive leadership
9	Poor Mobile trnasport from satilite facilities from stand alnoe ED to Main campus
10	Limited consultation currently available at [redacted]
11	
12	
13	

EXTERNAL FACTORS	
OPPORTUNITIES (+)	
1	Increasing referral practices on site
2	Ability to treat more diverese patient population
3	CON grated for ED expansion
4	Potenital new building and department with new equipment
5	Innovative patient flow for fast track patinets.
6	Significant City presence with support of local programs
7	[redacted]
8	Pull for Women's centered acitvities at Women's pavillion
9	Orthopedic Urgent Care around the corner from ED
10	Only ED access for half of norther neighboring county

EXTERNAL FACTORS	
THREATS (–)	
1	CON granted years ago with threat to pull oif not utilized
2	False hope and promises of staff about build
3	Two other regional competators are affiliated with Major Medical University
4	Recent negative press about CMS fraud less than 10y ago
5	Loss of identity if associated with large University
6	Disruption of traffic with recent population boom
7	
8	
9	
10	

Appendix C

Organizational Approval Letter

[redacted]

July 17,2019

To East Carolina University College of Nursing:

We at WakeMed North have reviewed Gwen Harris's DNP Project Proposal ***"Emergency Department Fast Track Triage ".*** Ms. Gwen Harris has organizational support and approval to conduct their Doctor of Nursing Practice student project within our institution. Our organization's liaison, or project champion, for the project is [redacted]

We understand that the timeframe for this project is from the date of this letter through August 1, 2020. Implementation at the project site will occur January 2020 through April 2020, unless otherwise negotiated. We understand that for Ms. Gwen Harris to achieve completion of the DNP program, dissemination of the project is required by the University and will include a public presentation related to the project and submission to the ECU digital repository, The ScholarShip. In addition, we understand that ECU College of Nursing encourages students completing exemplary scholarship to develop a manuscript for publication, but that is not a requirement. Our organization understands and agrees that the student will not use our organization's name in the formal project paper or any subsequent posters, presentations, or publications.

Our organization has deemed this project as a quality improvement initiative. Our organization is aware that this project will be processed first through our organizational approval process and then through the ECU College of Nursing process, which may include a formal review through University and Medical Center Institutional Review Board of East Carolina University (UMCIRB), if needed. Our organization does have an Institutional Review Board (IRB). We are aware that in the absence of an organizational IRB, the project will be submitted through the ECU College of Nursing review process which may include UMCIRB review if needed.

Thank you,

[redacted]

Appendix D

Example of Hourly Number Breakdown for Analysis

Hours	Total Sum of Arrival to Doc	Total Sum of ED LOS (mins)
0000-0059	105	170
1100-1159	1035	2269
1200-1259	3266	6634
1300-1359	6158	15396
1400-1459	5489	17394
1500-1559	5072	17650
1600-1659	5858	19297
1700-1759	6195	20037
1800-1859	7127	23795
1900-1959	9746	26683
2000-2059	8409	23705
2100-2159	4297	11345
2200-2259	784	2109
2300-2359	159	271
Grand Total	63700	186755

Appendix E

COVID-19 Updates by date

Week of February 14, 2020

- Advisory for travel screening
- COVID recommendations update February 2
- Advised to call Infection Prevention nurse on call and the clinical administrator
- COVID-19 suspected patient will immediately be placed in negative pressure
- CAPR training suspended for supply concern

February 21

- Organization-wide push for renewal of Magnet status
- No COVID information

March 3

- Initial preparedness
- Travel screening questions in triage or arrival

March 4

- General public screening questions
- Referral to DHHS for advisory
- Encourage to call PCP for symptoms and screening
- Priority to screen, identify, isolate potential patients
- Advise to update CAPR and N95 masks
- Remove all surgical masks from public access

March 5-14 Cleaning procedures

- Clean is the same as Enteric. Leave negative pressure or Hepa filter running for 1h before cleaning. Will also use ultraviolet light for last stage of cleaning.

March 6

- Set up for COVID-19 Epic resources page
- Update addendum to expect changes in policy and procedure during evolution of illness

March 7

- Initial conversion of triage rooms to negative pressure
- Triage room was not emptied of supplies
- Uncertainty of which staff were certified CAPR trained
- Second triage room had no supplies removed
- Total loss of supplies in the two triage rooms

March 10

- Incidence command center activated
- Limited test availability
- Reminder to continue to encourage PCP as initial contact

- PPE program plan
- Virtual UC established at a reduced rate from $25 to $15

March 12
- Visitor restriction to one person per patient except for pediatric patients
- No children under 12 allowed if not a patient
- No sick visitors
- Contact/Droplet precautions- wipe all surfaces
- Twice daily meeting for upper management for COVID related issues
- Daily huddle is now remote, no longer attended in person
- COVID exposure will be notified from Occupational Health to management to the employee

March 13
- Visitor updates two visitors allowed for pediatric and more for end of life care patients

March 14
- Population and staff encouraged to self-isolate, if symptomatic check temperature twice daily
- Full negative pressure of triage rooms
- Complete change in the triage process and location

March 16
- BCBS testing for COVID
- Early prescription refills available

March 17
- Epic® release notes for isolation procedures
- Visitor/Patient screening at all facility entrances
- Restriction tightened twice this day
- IT troubleshooting
- Telehealth increased- providers are setting up in separate area of the ED

March 18
- Elective procedures are canceled

March 20
- Updated COVID resources on organization intranet

March 22
- Tent planning begins
- Plan is for 4 RN, 2 techs, 1 APP, 1 PAR
- Workflow
- Inclusion /exclusion criteria
- Charting limits

March 23
- Facility CAPR training

March 24
- Employee wellness checks at the start of each shift
- Looking for fever, cough, SOB
- Staff relocation from closed departments

March 25
- Beginning of staffing tents for COVID testing
- Addition of 4RNs, 2 techs, 1 registration member from 11a-9p
- Census numbers remain low-frequent low censusing of staff- suggestion to being to keep track of hours
- Initial request for Charge nurse updates weekly for uniform information distribution.

March 27
- No visitors
- Update regarding sufficient PPE at this time

March 31
- Notification of potential updates about PPE shortage- cluster tasks, reuse N95, new N95 collection and sanitizing protocol
- N95 masks will be placed in brown paper bags with name and department and returned the next day
- Sani wipes are to be used only when required
- Monitor PPE stock
- Keep all PPE secured and do not lend out to other departments
- CAPRs to be used on multiple patients, but disinfected between each patient
- No longer printing EKGs for potential COVID patients, only electronic submission in EMAR

April 1
- All patient care staff will wear procedural masks
- COVID patients -staff will wear appropriate forms of isolation
- Staff biometric screening have all been rescheduled
- Epic® charting updates
- IS to increase network bandwidth
- Employee assistance program highlighted

April 2
- AHA guidelines for teaching BLS
- COVID testing panel order set in Epic®
- Encourage all patients to stay in rooms
- Will obtain hand sanitizer from a local producer, do not throw away empty bottles

April 3

- Creation of PPE toolkit resource page

April 4
- Stopped tents for COVID testing due to lack of numbers

April 6
- Projections for numbers over the next few weeks
- Cross-training of nurses to other units
- Encouraged social distancing while working
- Continue to conserve supplies such as Sani wipes

April 7
- Incident command center to update and ensure accurate employee information
- Corporate consideration for wearing home supplied masks to work, more information to come
- Update to align guidelines with CDC recommendations
- Closure of one of the Urgent Care facilities

April 8
- Alternative cleaning for iSTAT and glucometer
- Reminder of sick policy for organization

April 10
- Encouragement from upper management to change Facebook profile picture to #HeartsfoHeathcareWorkers
- Beginning next week decrease to daily COVID conference calls down from twice daily
- Daily Podcasts by [redacted] leaders
- Administration level encouragement to no put off important medical decisions due to COVID. All [redacted] practices are for Virtual Visits
- Masks for all persons in the hospital, patients, staff, and visitors
- Reduction from 5 shifts per mask to 2-3 shifts

April 13
- Phase 2 of increased internet bandwidth
- Change in-room cleaning procedure. Now must wait 30min for all PUI and +COVID patients to clean the room. Hepa filter must be running the entire time.
- Reminder for DHHS website for the most recent updates
- Organization will offer hand sanitizer for employee's homes. Must bring in the empty bottle.
- Cafeteria is offering home meal service for employees
- Changes to FSA account and no longer a need for Rx to fill OTC medications and menstrual care products can be purchased with FSA account.

April 14
- Employees that want to be tested can now fill out the online form and no longer have to go through the Employee Resources center or phone triage line.

- Wear a mask to and from the car.
- Cloth masks are not considered PPE. Cloth masks can be worn over a surgical mask.

April 16

- Employee discounts from local businesses are now listed on the Corporate homepage.
- Reminder of Magnet visit at the end of the summer.

April 17

- Free AHEC webinar on healthcare worker wellness
- Continued weekday daily Podcasts
- Multiple updates about staffing and how to low census staff
- Canceled charge nurse telephone meeting due to lack of new updates

April 22

[redacted] Physician Practices offer mobile testing sites at only [redacted]

- Request for hand sanitizer bottles to refill
- Daily podcasts from organization leaders about COVID-19 updates

April 27

- Notification of changes coming to employee screening
- Advisory message that no PPE will be allowed in hallways except face masks

April 28

- Due to the dramatic drop in patient volumes employees are encouraged to use PTO or the sabbatical program
- Update about room cleaning and disinfection practices
- Update about room hold times after patient discharge
- When eating in the breakroom, please maintain social distancing of 6 feet

May 4

- Phased reopening plan by the NC governor to begin May 8, 2020
- Triage tents will be taken down at [redacted] campus on May 4, [redacted] campus on May 6, and main campus on May 11
- Staff encouraged to take daily temperatures
- Post-COVID-19 Rehab order will be placed in Epic® in mid-May
- No N95 mask fitting will take place for existing staff

May 8

- Reminder about the 3W's wear, wash and wait
- Continue to follow the most updated CDC guidelines

May 14

- Must have work badge visible when entering the building so the screening staff will know if you can enter without being stopped at the door
- No longer need to have patients sign for COVID discharge instructions

- Removal of NCDHHS COVID documents from discharge instructions they have been changed to the CDC guidelines

May 28

- CDC recommendations to follow regarding separation into A & B side of the waiting room for COVID and nonCOVID related presenting complaints
- Decreased to 2 Hepa filters in the department
- New COVID swab to arrive soon. Education to be provided by video and then will need to sign an attestation form

June 1

- Mid-turbinate nasal swab PowerPoint and video distributed. No observed check off at this time

June 2

- Update about Remdesivir label confusion. Medication is not used in the ED

June 9

- COVID-19 visitation policy clarification provided- cannot prevent visitors from coming and going; it is highly discouraged. Visitors are encouraged to remain in the patient room in order to decrease the potential spread of the virus.